UM.ONLINE

FINDINGS OF UM'S SHIFT TO ONLINE EDUCATION DURING THE GLOBAL HEALTH CRISIS

THE STUDENT PERSPECTIVE

Maastricht University

EDLAB

PREFACE

When revisiting all the input we received from students and staff one thing becomes clear. This report, at its core, is not only a story about educational experience, it is about UM students' and staff's state of mind, uncertainties, frustrations and challenges during the first wave of the global pandemic. Most sentiments shared are consequences of a chain reaction of events ignited by the (inter)national COVID19 measures; one of those being Maastricht University's rapid switch to online education.

We refer to the online education-periods in March-June as 'emergency remote learning', emphasizing the difference between a hasty online transformation of on-site education and thought-through instructional design in an online learning format. Our mixed-method research approach allowed us to portray general satisfaction levels and opinions towards UM education in period 5 of the previous academic year. These were overall low but supportive, especially in connection to our problem-based learning standards. Our findings also showed an overall high appreciation for the empathetic and creative way UM teaching staff realized the online switch, allowing education to continue and avoiding study delay. The answers to the open questions in our *UM.online* survey and the results from the focus groups provided us with a more nuanced picture, showing perceived advantages of online education like online/recorded lectures, increased flexibility and self-direction. Our data also made clear to us that a decrease in appreciation of the learning experience in period 5 has as much to do with the format of education as with the disruption of society and impacted individual lives.

Hence, with the prolonged adverse impacts of the global pandemic, student and staff *well-being* are to be treated as an overarching construct in any evaluation of education. Looking at our data, even though causality cannot be established due to the study design, student and staff *well-being* should be a prime concern for Maastricht University in the year(s) to come. And as far as we can see, it already is.

Most of the education in the academic year 2020/2021 is expected to take place in an online or blended format and expectations about the quality of online education will rise. In line with this development, this university should be able to gradually avoid the sphere of 'emergency remote learning' and design online formats for CCCS-PBL that mind constructive alignment, international/intercultural learning and technical (in)compatibilities. An ambition that EDLAB, through CPD, with eye for faculty online/blended practices, and with a renewed online/blended-learning agenda for the operationalization of EDview, fully supports.

Lastly, with regards to the section 'Self-study during the pandemic', the project team extends its gratitude to Felicitas Biwer and Anique de Bruin (FHML). We also thank all staff members and students who contributed to the set-up of the study.

Maastricht, October 2020

On behalf of the project team,

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EXECUTIVE SUMMARY

Following Maastricht University's switch to online education in March 2020, the Executive Board asked EDLAB, with the support from Academic Affairs, to research student and staff experiences with online education. Titled *UM.online*, the project sought to collect experiences with online education in period 5 of the academic year 2019/2020 and launched a UM-wide online student survey and organized a number of focus groups with students, tutors and course coordinators in May/June 2020 to gain the requested insights. Throughout the report, online education, as conducted in the final months of the 2019/2020 academic year, is defined as 'emergency remote learning', reflecting a crisis situation during which a variety of different online formats were implemented to quickly replace on-site education activities.

The research team defined a number of core constructs to measure the student educational experience in period 5 effectively: educational activities, experiences with teaching staff, assessment, self-regulated learning during the pandemic, engagement, well-being, technology & support and communication.

This summary only contains the student perspective. The teacher perspective analysis is ongoing and will be integrated in November 2020.

Overall, students evaluated their educational experience during the lockdown with 5.7 (on a scale of 1-10), in contrast to 8.0 before lockdown. The summary of our findings, organised per research theme, provides further explanation for this decrease in score and offers a basis for a number of recommendations for UM. For a full overview of the recommendations please visit the recommendation section after each chapter.

Educational activities

Students have mainly experienced online education in the form of tutorials, lectures, practicals and thesis-related activities in period 5.

Tutorials

In the online setting during period 5, tutorials are reportedly shorter, have lower and inconsistent attendance and tend to be geared towards efficiency and content delivery which makes it harder to establish collaborative group dynamics. The dependence on technology is high and internet-connection issues and outdated/malfunctioning hardware (e.g. webcams) negatively affect group cohesion. As a result, students and tutors cannot rely on non-verbal communication which is regarded as a major shortcoming of the online setting.

We recommend to agree on online classroom etiquettes and prioritise tutor training on online teaching delivery and student engagement. Furthermore, we propose a couple of basic online-class instructions for tutors.

Lectures

Students appreciate the availability of lecture recordings. This is considered to be an innovative practise that should be maintained once education returns to a 'new' on-campus-normal. In addition, live lectures – online and offline – facilitate student-teaching staff contact, play an important role in students' social lives and provide for a weekly learning structure.

Practicals

Experiences show that online alternatives for practicals are limited and often insufficient. Students value practicals as a way to apply what they have learned in practice and as preparation for real-life situations. Hence, cancellation of practicals due to the online context is not advised. Instead, consider

practical-related knowledge clips and formative assignments with room to ask questions to (partly) overcome the lack of a physical environment.

Thesis-related activities
Thesis students are strongly affected by the switch to online education and experience. Contact with supervisors has become more difficult, research methods are harder or impossible to operationalise and the absence of learning spaces has contributed to a sense of isolation. Students experience increased procrastination and struggle meeting their deadlines. Methodological leniency and more contact opportunities with supervisors and fellow thesis students is advised.

Experiences with teaching staff
The way in which teaching-staff, with limited recourses and time, designed and provided online education is appreciated. Students are grateful when their tutors make online interaction more personal. Still, in many cases, the online-setting has immobilised social and informal dimensions of education and teaching-staff could make more effort to appeal to those within any educational activity. Furthermore, students sense inconsistency with regards to recognition and understanding of personal circumstances affecting educational performance.
We recommend to invest time into group dynamics, to clearly communicate faculty standards for corona-hardship clauses, and make an appeal for more recognition of individual circumstances.

Assessment
Many students reported on their assessment experiences in the open answer section of the survey and in the focus groups. Based on this input, it is noteworthy to mention that students experienced a shift from 'knowledge retrieval assessment' to 'knowledge application assessment'. This becomes for example apparent where summative assessment like on-site central exams were replaced by (a-synchronous) non-supervised take-home exams. Next to that students experienced an increase in formative assessment: more weekly tasks, collaborative papers or individual/group presentations during the course.

Even though students perceive the difficulty-level and workload of assessment in period 5 to be higher, they overall enjoyed the course's alternative assessment practises. It increased their motivation to prepare for tasks, provided more structure, reduced anxiety (multiple assessment moments instead of one high stake measurement), reduced risk of technical failure and allowed for a better distribution of workload.

Those students that experienced online proctored exams feared internet connection failure and regarded the monitoring invigilators as an infringement to personal space. A few students also noted it to be less stressful since they could work in a home environment.

Self-regulated learning during the pandemic
Students find it considerably more challenging to self-regulate their learning activities during the lockdown. Due to an increase of a-synchronous educational tasks they have to do more self-study yet find it harder to focus, concentrate, regulate and plan their efforts. Furthermore, the increased responsibility on one's individual study-performance is stressful. A majority of the students would benefit from more weekly structure and easier contact with mentors and/or study advisors to discuss study-related uncertainties.

Engagement
A large proportion of the students feels (significantly) less connected to other students and teaching staff. The social dimension of education proves to be a prominent feature in the overall learning experience and has basically come to a standstill in period 5. Creative efforts from students and

teaching staff to organise social sessions (e.g. zoom study sessions, game nights, and vlogs) are appreciated but tend to lack the authenticity and informality of non-scheduled exchange. The lack of social contact also affects the collaborative quality in the classroom. Students indicate that it is important to know your fellow students and tutor in order to have a productive tutorial and develop strong group dynamics.

There are no quick fixes to improve engagement in the online context and potential solutions are rooted in instructional design, tutor conduct and well-being measures. One could think of organising online events where student (sub-)cohorts can meet, connect study advisors more to faculty educational design/policy processes and install tutor online open office hours for individual tutor-student contact.

Well-being

Our data clearly indicates that since the beginning of the global health crisis, and UM's switch to online education, students rate their well-being (much) worse than before. Students fear study-delay, face more stress and have more uncertainty about the progress of the academic year. They furthermore perceive an increase in workload, are less motivated and struggle to find a healthy work-life balance. Students mourn the overall loss of structure in their lives (e.g. friends, sports, mandatory tutorials, study in the library) and complain about a lack of physical exercise, dysfunctional learning environments and screen fatigue. Many students experience an increase in severe symptoms such as loneliness, anxiety and in some cases even psychosomatic complaints.

Furthermore, this report shows how educational experience is affected by a combination of well-being, engagement and self-regulated learning indicators. This on the one hand emphasises the need for support in students' self-regulated learning abilities and student engagement as added dimensions to existing well-being support measures. On the other hand, we have learned that well-being cannot be addressed in isolation from educational practice: if students aren't doing well, they also aren't learning well (and the other way around).

Technology & Support

Connection issues come out on top with regards to technical issues and hinder student in participating in tutorials or follow online lectures. For technical assistance, students mostly turn to other students for help. Students would welcome more visible and more immediate support from a central helpdesk devoted to all kinds of online learning issues. Students furthermore mention the need for a 'step-by-step' guidelines for all the OLA's that they are required to use.

Students and teaching staff worked with a select number of online learning applications (OLA), Zoom und Blackboard Collaborate Ultra in particular. Students practically prefer Zoom over Blackboard Collaborate Ultra, yet criticise Zoom's dubious privacy regulations.

The advantage of growing uniformity and ease in use of a platform like Zoom, may outweigh the choice for different or a diversity of OLA options and functionalities. It is advised to better prepare course coordinators and tutors to use specific OLA's so they can make best and quicker use of its functionalities in online learning activities.

Communication

During period 5 students experienced both an information-overload and lack of communication from a variety of sources. It is our understanding to best keep communication sources as close to the student population as possible (e.g. tutor/course coordinator over programme director), to the point and in a minimal frequency.

TABLE OF CONTENTS (INTERACTIVE LINKS)

I. INTRODUCTION

On March 15, Maastricht University had to abruptly cease all on-campus activities and make a rapid switch to online education. As a result, the remaining educational activities in period 4, period 5 and period 6 in 2019/20 were completely taught online. During this period we have experienced unrelenting flexibility, resilience and creativity of UM teaching staff to provide students with a quality and meaningful alternative to on-site education. Also, on the part of the students, we noticed general acceptance and respect for the way UM managed the continuation of education with minimal study delays.

In order to make informed decisions about the future of online education at UM, EDLAB was asked conduct research on the online educational experiences of both students and staff based on the leading question: What can we learn from UM's shift to online education during the global health crisis? The research team decided to evaluate students' and staff experiences in period 5, the first UM period completely taught online, through an online survey for all students and focus groups with students and teaching staff. In June 2020, based on the first results from the survey, we published a first report containing preliminary results and a short overview with six main *lessons learned* (see Appendix 1). In our research approach we acknowledge the wide variety of personal circumstances that students are in, which are not always carefree and beneficial to learning. Hence, besides focusing purely on experiences with online educational activities, other experience-decisive themes such as self-regulated learning, well-being, engagement and technology have also been emphasized in our investigation. As such, our findings as presented in this report, paint a holistic picture of the student experience at UM during the global pandemic. On the one hand, the scope of our research has provided us with a rich and varied dataset, which makes it, on the other hand, in some instances difficult to pinpoint where the effect of the global pandemic ends and experiences purely related to the online learning setting begin. Causality, especially regarding our well-being and engagement indicators, is therefore difficult to establish. Also, given the lack of proper baseline measurements regarding well-being aspects, we present our findings and insightful correlations with care and prudence.

In this report, online education, as conducted in the final months of the 2019/2020 academic year, will be defined as 'emergency remote learning', reflecting a crisis situation during which a variety of different online formats were implemented to quickly replace on-site education activities. Emergency remote learning differs from an incremental development of online learning formats that would actively consider and embed PBL core-learning principles (CCCS), constructive alignment, international classroom and technical solutions. We do however not imply that the online solutions found during the emergency remote learning period automatically lacked these considerations.

Based on our findings, we took the liberty to formulate recommendations to improve the student experience in the online learning setting. To give some direction for implementation we have classified the recommendations under *Management* and *Teaching staff level* recommendations. The recommendations are general in nature and relevant for all faculties and/or service centres. Faculty-specific data can be found in the appendix.

In November 2020, the final edition of this report shall be published, in which the teaching staff experiences with online education in period 5 are added, thus drawing a more complete picture.

II. METHODOLOGY

To generate rich qualitative and quantitative data out of the authentic real-life learning and teaching experience, we adopt a mixed-methods approach. Using these methods, we aim to capture the experiences of the main stakeholders in a PBL setting: Students, tutors and course coordinators. The following instruments are at our disposal:

	Students	**Tutors**	**Course coordinators**
UM-wide evaluation survey	*UM.online*		
Focus groups	*UM.online*	*UM.online*	*UM.online*
Course coordinator evaluation survey			Faculties
Tutor evaluation survey		Faculties	

Table 1. Overview of instruments used

Each instrument has a specific purpose. The *UM.online* survey provides a broad picture of online learning from different perspectives by asking questions about several relevant constructs. The interviews/focus groups aim to cross-reference and provide depth and context to the results.

Data collection and analysis: UM.online student survey

All registered UM bachelor and master students received an e-mail on May 21 in which the goal of the *UM.online* survey was explained, and were asked to participate. Several reminders via several channels were sent to students and the survey was closed on June 8.

Several background questions were included in the survey: demographics (age, gender), study programme information (bachelor/master programme, start of study at UM), and living situation before and after the lockdown. The survey included the following question themes: evaluation of online education (tutorials, lectures, thesis work, overall) compared to education on campus before the lockdown, self-regulated learning, engagement with other students and staff, well-being, and technical issues. The survey included a substantial number of open questions where students could elaborate on e.g. elements of online teaching they liked or disliked, and what kind of technical support they needed. It is noticeable that large numbers of students took the opportunity to give extensive feedback in these open questions (for full survey see Appendix 2).

A total of 1973 students responded to the survey. Of these, 55 were excluded because they did not continue after the first question. This resulted in a sample of 1918 students total (response rate: 11.1% of all UM bachelor and master students). The majority (68.1%) were female students (male 31.5%; other 0.5%). Mean age was 21 years 2 months (median 21; range 17-48). The large majority of students (85.0%) were bachelor students; 15.0% were master students. 14.0% of all UM bachelor students responded compared to 5.1% of all UM master students, and 11.1% of all UM bachelor and master students. Response rates among bachelor students ranged from 0.0% (Cultuurwetenschappen) to 34.4% (University College Maastricht). For master students, we asked for the faculty that offered the program (and not the specific program). Response rates varied 3.3% (FHML) to 8.0% (FSE). For a detailed overview of participants, please refer to Table 2.

Bachelor Program	Registered students (N)	Response (N)	Response (%)
Cultuurwetenschappen	9	0	0.0%
Arts and Culture	273	47	17.2%
European studies	843	112	13.3%
Economics and Business Economics	989	177	17.9%
Fiscale Economie	95	10	10.5%
Econometrics and Operations Research	211	16	7.6%
International Business	1782	168	9.4%
Gezondheidswetenschappen	755	81	10.7%
Biomedical Sciences	894	87	9.7%
European Public Health	267	21	7.9%
Psychology	1190	149	12.5%
Rechtsgeleerdheid	489	58	11.9%
Fiscaal Recht	164	16	9.8%
European Law School	998	116	11.6%
Geneeskunde	1025	112	10.9%
University College Maastricht	668	230	34.4%
Maastricht Science Program	491	118	24.0%
University College Venlo	92	13	14.1%
Data Science and Knowledge Engineering	347	81	23.3%
Digital Society	66	14	21.2%
Total Bachelors	**11648**	**1626**	**14.0%**
Faculty of Master Program	**Registered students (N)**	**Response (N)**	**Response (%)**
FHML	2228	74	3.3%
FPN	667	28	4.2%
SBE	1307	68	5.2%
FdR	1092	78	7.1%
FSE	237	19	8.0%
FASoS	357	17	4.8%
Total Masters	**5534**	**284**	**5.1%**
Total Bachelors and Masters	**17182**	**1910**	**11.1%**

Table 2. Response rate bachelor students (per program) and master students (per faculty).

Of bachelor students, 46.4% were freshmen (start 2019/2020), 31.7% started their studies in 2018/2019, and 22.0% started in 2017/2018 or before. Of master students, 80.1% started their studies in 2019/2020, while 19.8% started in 2018/2019 or before.

The large majority of respondents (74.3%) lived in or near Maastricht in students housing before the lockdown, 11.7% lived more than 15km from Maastricht with parents/family, 4.8% in or near Maastricht with parents/family, and 2.1% lived more than 15km from Maastricht in student housing. Six percent had other living arrangements (e.g., living with a partner in an apartment in Maastricht).

Among the students who lived in or near Maastricht in student housing, 34.0% stayed after the lockdown, 44.4% moved back to their home country, and 14.9% moved elsewhere in the Netherlands (6.7% other arrangement). Among those who lived with parents/family 91.5% stayed after the lockdown.

For the quantitative data, most data is presented as descriptive statistics. Factor analysis and reliability analyses have been performed where appropriate, such as the questions on remote self-study and engagement. Sample sizes may vary due to missing values.

Furthermore, the open questions were thematically coded by all researchers using ATLAS.ti being randomly allocated a certain proportion of the data. Beginning with an open coding scheme, three of the researchers coded the data, continuously discussing and adapting the results. The open questions being a key source of the data, an overview of the key themes emerged, which then provided a starting point for the analysis and the coding of the focus groups.

Data Collection and Analysis: UM.online Focus Groups

For the qualitative data collection, we have organized six student focus groups (one per faculty, with 24 students in total), two mixed tutor focus groups and three course coordinator focus groups (each including two faculties). The findings related to teaching staff will be integrated in November 2020. The central questions were: From your experiences with online education in period 5, what worked well, what didn't work well, and why? What can we learn from this for the future? The topics of discussion included educational activities, assessment, engagement and support. The preliminary results from the survey have been used to target specific topics and deepen our questioning. Each student's participation was compensated with a 15€ donation to the SWOL emergency fund.

Each focus group took place online via Zoom and lasted 90 minutes with an average of eight participants present and moderated and observed by two members of the research team. The focus groups have been recorded after which the videos were stored in the ZOOM cloud for 24 hours. The focus group discussions have been transcribed verbatim, and the audio transcripts were saved for 10 days after they were automatically removed. The focus group transcripts were analysed thematically informed by the coding scheme from the student survey. All student focus groups were coded by one researcher, while the coding scheme was discussed, revised and adapted by the team.

Data Collection: Faculty staff surveys (results to be integrated in November 2020 edition)

The UM faculties have collected the experiences of course coordinators and tutors in period 5 by distributing faculty-specific surveys. UM.online has used the reviews of the faculty-surveys to give shape to topics of discussion in the focus groups with teaching staff.

III. Educational Activities

Overall educational experience

In October 2018, the EDview 'Do's, don't and Don't knows in PBL' were published, recalibrating both the conceptual basis for problem-based learning at UM and calling for diversification of its format. The CCCS principles of Collaborative, Contextual, Constructive and Self-directed learning were established as the DNA of Maastricht University's problem-based learning experience. Within the *UM.online* project, we intend to learn from the education experiences of students and staff in period 5 and to make sure our future education remains in line with UM's educational vision. We actively align our data collection and analysis with the CCCS-principles.

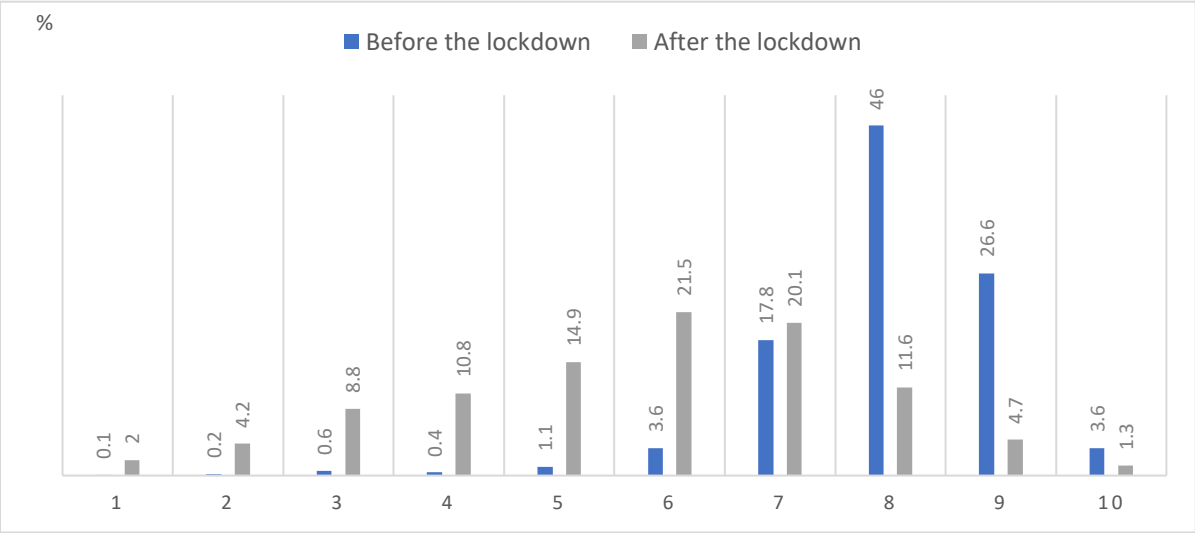

Figure 1. Rating overall educational experience before and after the lockdown

At the beginning of our survey, respondents were asked to rate their overall educational experience before and after the lockdown on a scale from 1 to 10. The mean rating for education before the lockdown was 8.0, after the lockdown 5.7 (see Figure 1 for the frequency distributions). The differences between faculties can be found in Appendix 3.

This chapter aims to gain more detail to explain the stark drop in appreciation of education. For this we made a distinction between different type of educational activities students have experienced during period 5: (mainly) tutorials, lectures, practicals and thesis-related activities. Students were asked in which activities they participated in period 5. Almost all bachelor students (94.7%) participated in tutorials; master students slightly less (82.6%). Lecture attendance was similar for bachelor and master students (approx. 85%). Master students were – understandingly – more involved in thesis work (50.2%) than bachelor students (15.7%).

Tutorials

Length

Of the students, 43.3% experienced their classes to be (significantly) shorter, 43.4% about the same and 13.3% (significantly) longer, than during onsite education (see Figure 2). As a main cause for these numbers, students mention the difficulty to concentrate oneself online and an increased urge to (schematically) discuss all exam-relevant aspects. Students as well as staff find that being online requires more focus and attention, leading to *Zoom fatigue*.

This focus group student participant summarises: "*I found it very difficult to concentrate and be active in the tutorial. I do not think that the lack of concentration comes from the COVID situation in general - I'm pretty sure that I just find online tutorials very disengaging compared to in-class sessions. I also had 6 hours of classes right after each-other on one day and it was very tiring to spend that much time on my computer.*"

Partly, as a result of that, tutorials tend to be more directed towards content delivery. Sessions basically end when all relevant literature is discussed. Whereas a small number of students does appreciate more time-efficient tutorials in contrast to some excessively long or unproductive online tutorials, it is generally noticed that shorter tutorials do not create a good base to develop group dynamics or allow for deeper discussions.

Attendance and group size

Students see the COVID19-induced voluntary attendance rules as both a positive (in terms of flexibility and self-directedness) and a negative aspect (in terms of non-committal behaviour for themselves and their peers) of online education. Almost two-third of the students (62.2%) experienced (much) lower attendance in their online tutorials (see Figure 2). Whereas smaller groups are generally preferred in terms of motivation and preparation of the participants, inconsistency of the attendance numbers can be detrimental to the quality of the discussions and group dynamics.

While the research data does not offer conclusive evidence about the optimal attendance number in online tutorial groups, students generally report that an online educational activity works better with less participants than in the offline setting. With too many students in an online classroom, students observed themselves to be less committed to the learning process and learned less from their fellow students. Students that experienced low but consistent turn-out mention that the quality of small online tutorials actually increased since it attracts those students that have prepared well and want to actively participate (if the quality of the internet connection allows it). As one student remarks in the survey: *"[I liked that] only motivated people came to the tutorials, which made them more effective."*

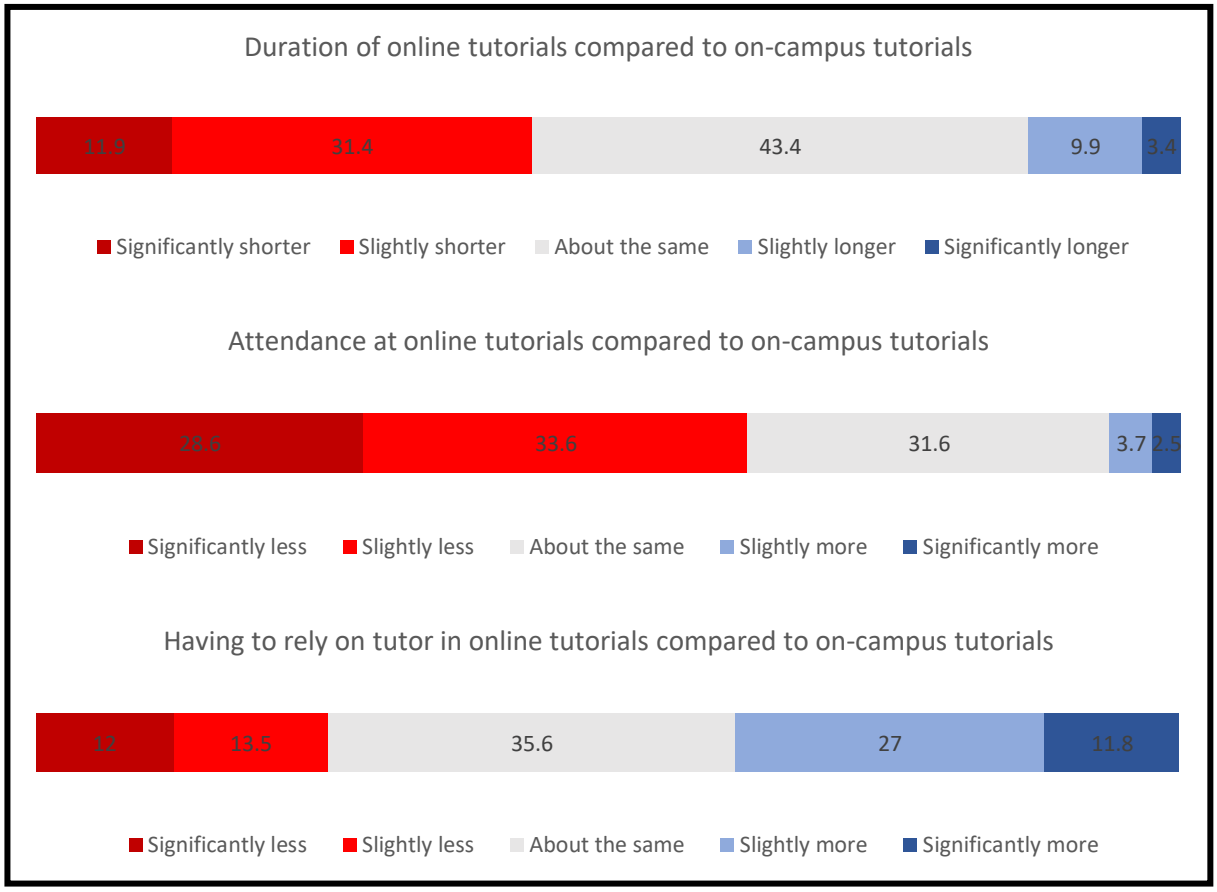

Figure 2. Duration of and attendance at online tutorials, and reliance on the tutor compared to on-campus tutorials. For difference between the faculties, please refer to Appendix 4.

Collaboration in tutorials

Collaboration is shaped through mutual responsibility, which requires a sense of commitment to one another that is harder to establish online. The data shows that group dynamics need additional attention through checking in, providing chat breaks or other ways of getting to know one's students

and students getting to know each other. Overall, 71.0% of the students rate the level of collaboration in online tutorials (significantly) lower than in face-to-face tutorial sessions (16.6% about the same and 12.9 (significantly) more). Our qualitative data explains that education is less personal and that there is a higher threshold to speak up and ask questions in an online classroom, especially for freshmen or students who do not know their peers yet. Notably, students report that the online context provides shy students with a lower barrier to speak up. As one student puts it: "[I liked that] people participated more actively because now also people are active who usually say a little less during the meetings." (*UM.online* survey).

Non-verbal communication

As a result of technical accessibility and/or unclear expectations, the irregular use of webcams during tutorials negatively impacts collaboration. On top of that, a bad internet connection and sound delays can result in hazy discussions. The decrease in non-verbal communication and the fact that only limited time is devoted to 'getting to know each other' explicate the disadvantage of not seeing/seeing less of each other. Our qualitative data strongly suggests that the consistent use of webcams makes learning considerably more personal and increases group commitment as it allows for expression of non-verbal communication and facilitates learning together. Students furthermore report that webcams keep them focussed during the session and triggers them to actively participate. As one of the focus group students puts it: "[...] in the tutorials you usually have your camera on. So people would notice if you do something else then pay attention. So, which made it for me a bit easier to follow as everyone still could see me."

Based on the above points, a large majority of students prefers offline over online tutorials as experienced in period 5, and 62.5% of the respondents (strongly) disagrees with the statement "I would like to have more online tutorials in the future" (see Figure 3, for differences between faculties, please refer to Appendix 5). As elaborated in the open answer sections of our survey and within the focus groups, UM students find that online tutorials fall short in facilitating some important basic PBL-aspects such as collaboration and group dynamics.

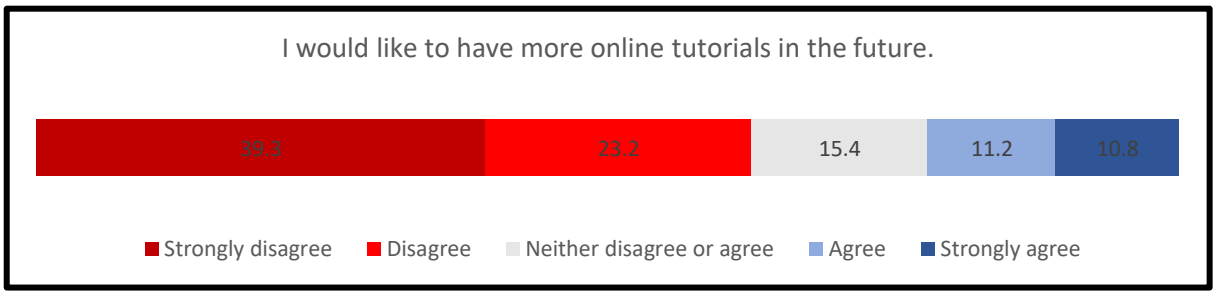

Figure 3. Level of agreement with more online tutorials in the future.

Recommendations online tutorials

Management level

- ✓ Develop an institutional online classroom etiquette
- ✓ Give priority to tutor training on online teaching delivery, online group dynamics and student (in class-) engagement
- ✓ Reserve more time for tutors to prepare and run online tutorials increase guidance, contact and attention to needs of individual students

Teaching staff level

- ✓ Cameras on
- ✓ Take breaks
- ✓ Discuss online conduct with students at the beginning of the course; attend to code of conduct/etiquette
- ✓ Get to know your students and let them get to know you
- ✓ Give space to non-content discussions
- ✓ Allow discussion to meaningfully go 'off-track' and avoid focus on efficiency in content delivery

Lectures

Recorded Lectures: an innovation long overdue
"But when we return to offline education, I would like to keep the recorded lectures." (Student participant focus group).

When looking at the statistical results of the survey, students rate online lectures, albeit recorded or unrecorded, as a positive change due to the switch to emergency remote learning. 54.9% of the students (strongly) agree with the statement "I want online lectures in the future", whereas 27.3% of the students (strongly) disagreed) (see Figure 4, for differences between faculties, please refer to Appendix 5) and 17.8% neither agree or disagree. The interpretation of this data requires some qualification, since the question did not qualify further whether these online lectures were also made available as recordings.

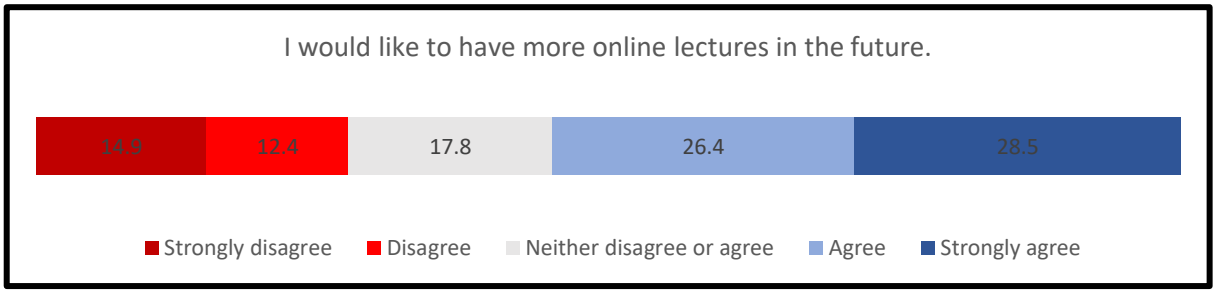

Figure 4. Level of agreement with more online lectures in the future.

Around a third of students responded that online lectures also contributed (significantly) less to their learning process. Next to that, more than half of respondents reported comparable attendance at lectures (see Figure 5). The interpretation of this data might require some qualification, since the responses are based on different *online* lecture formats and the question did not qualify further whether these lectures were recorded.

The qualitative survey data explains that students mostly appreciate lecture recordings over 'live' online lectures because they aren't subject to network connection issues. Lecture recordings allow for flexible access, can be rewatched multiple times, are adjustable in speed, allow for breaks, don't require any travel time and are accessible for students in different time zones. When made available quickly, recorded lectures are a major advantage in terms of exam preparation and general understanding. As a student in the survey puts it: "*I guess recording the lectures is both a blessing and a harm. Because the lectures are recorded it is always possible to watch the lecture at a later convenience and in most cases being a couple days before the assignment deadlines or right before the exam."* Students overwhelmingly appreciate this service, as an overdue innovation, and something to keep in future lecture practises.

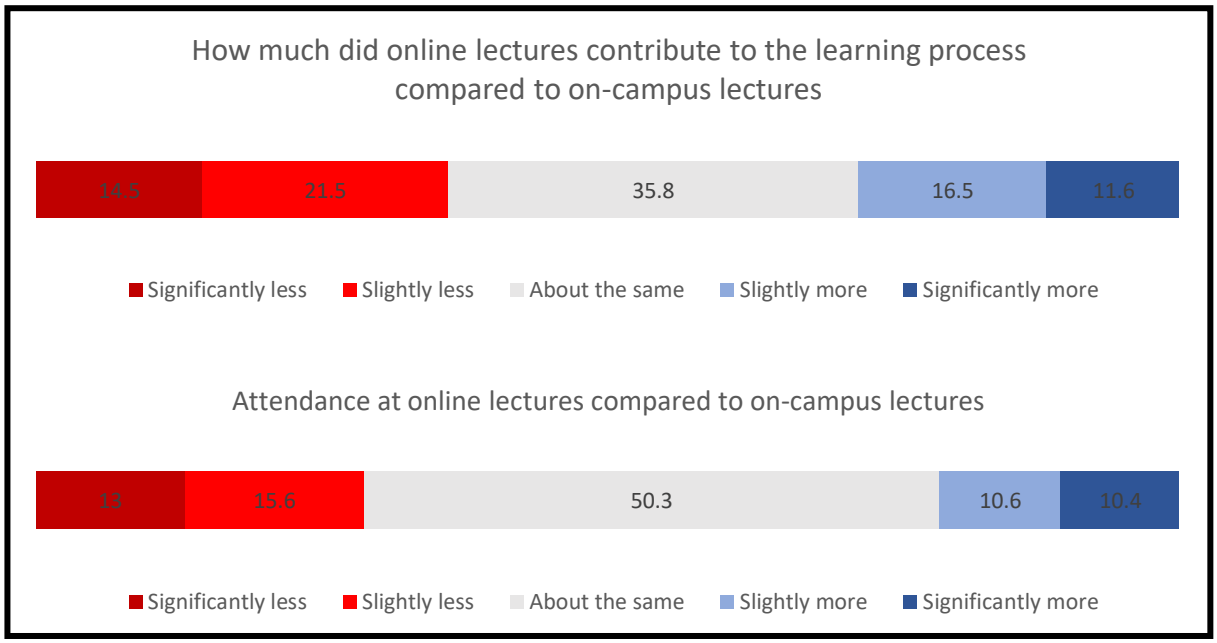

Figure 5. Contribution to learning process of online lectures and attendance at online lectures compared to on-campus lectures.

The live element of lectures remains relevant though as it contributes to the students learning experience. Students find it important to be able to ask questions, to see and interact with the course coordinator, being held accountable, or to see fellow students. Live offline lectures are furthermore attributed with two additional advantages over live online lectures: easier contact to course coordinators and informal contact with fellow students and friends. It is therefore advised to maintain the lectures both in their offline and recorded format. It is therefore advised to maintain the lectures both in their offline and recorded format. As one student puts it: *"But then again, most of us did not watch any lectures, because the physical presentation of a real human with the possibility to ask questions was missing. In this case, most referred to already existing educational videos on platforms like YouTube and this is not what a university education should (only) be about."* (*UM.online* survey)

Making online (recorded) lectures work

Online lectures need to adhere to a number of quality standards in order to be effective and attractive to students, such as good sound quality, optimal and meaningful use of slides, the possibility for interaction, quick uploads and download-friendly files. Students particularly appreciate the way some lecturers offered a set of short(er) knowledge clips, sometimes as part of a preparatory task, that breaks up the content or allows for more in-depth discussion during the scheduled, synchronous tutorial time. Recorded lectures, either in full or cut up in a set of knowledge clips coincide well with active Q&A sessions and allow for more active learning and deepening of the learning material (similar to 'flipping the classroom'). Data shows that the interaction between lecturer and student is not necessarily impeded in lectures that have been designed for online learning since exchange can easily be organized through interaction tools or Q&A sessions.

As one student puts it: *"The online Q&A sessions with the course coordinator/lecturer [...]. Those sessions really helped to get a deeper and more global understanding of the materials that were discussed in the course. You were also more open to ask questions, as you could write them into the chat. Those Q&A sessions also gave us students a good way to approach the course coordinator in case of questions."*

As for future innovations of online lectures, students see room for more speaker diversity, ranging from external academics to professionals.

Recommendations online lectures

Management level

- ✓ Irrespective of an online or offline setting, make recorded lectures a common practice at UM.
- ✓ Invest in facilities and support to create knowledge clips
- ✓ Offer tutor training to design online lectures and make knowledge clips

Teaching staff level

- ✓ Align the lectures with your course and re-evaluate what role lectures have in your course. Recorded lectures should be more integrally linked to the course content in order for them to remain relevant.
- ✓ Consider recording live lectures, including interactive elements or Q&A sessions and record these
- ✓ Make recorded lectures available to students within a day after the recording
- ✓ Update recorded lectures frequently

Practicals

Students that depend on practicals (i.e. skills courses) to gain complex professional skills, remark that alternatives offered by online learning fall short as replacements of physical practicals. In many cases practicals or lab work were cancelled altogether.

As one focus group student recalls: *"For skills and practicals basically everything was left up to us, so we didn't have scheduled classes as we normally would. Obviously, physical examination cannot be taught online. So that's something we really, really miss and we are afraid that we are missing a lot of key information for the future, because these classes will not be repeated."*

In some instances, students enjoyed online variations of practicals during which skills-related knowledge transfer was made possible in the form of short knowledge clips or small assignments. Students also appreciate alternatives that closely resemble 'reality', e.g. simulation sessions via Zoom that show how specific practices are carried out onsite.

The exact format of the practicals should be based on the intended learning outcomes of the course, using synchronous and a-synchronous education to their best advantages. On the one hand, synchronous approaches may be better suited to provide students with real practice and giving the chance to ask questions. On the other hand, a-synchronous practicals, similarly to the advantages of recorded online lectures, offer flexibility and sometimes come with creative new assignment-approaches: *"[For the future, I would like to keep] having assignments rather than the lengthy practicals*" a student in our survey adds. Still, with the absence of the physical experience of the practical, many of the solutions were indeed solutions for an emergency situation, making the overall learning experience of practicals less satisfactory.

Recommendations practicals

Management level

- ✓ Facilitate and prioritise Corona-proof on-campus practicals

Teaching staff level

- ✓ Make use of practical-related knowledge clips and assignments, only in addition to the physical exercise

Thesis

In general, the UM switch to online education substantially hindered students' final thesis progression. 66.0% of the students reported that working on their thesis was perceived (significantly) more difficult (see Figure 6, for differences between faculties, please refer to Appendix 6). Like in other study activities, the thesis writing process has suffered due to a lack of confined study spaces, a general lack of motivation and higher (mental) thresholds to ask for advice or a meeting with the thesis supervisor. Where applicable, students report an increased difficulty in data collection, due to restricted lab access, difficulty to get and do interviews and closed archives. Whether these complications have also affected the quality of the thesis can't be determined at this stage. In some faculties, students were urged to be transparent about their research and writing difficulties due to the Corona-crisis and make mention of difficulties in data collection in their methodological sections.

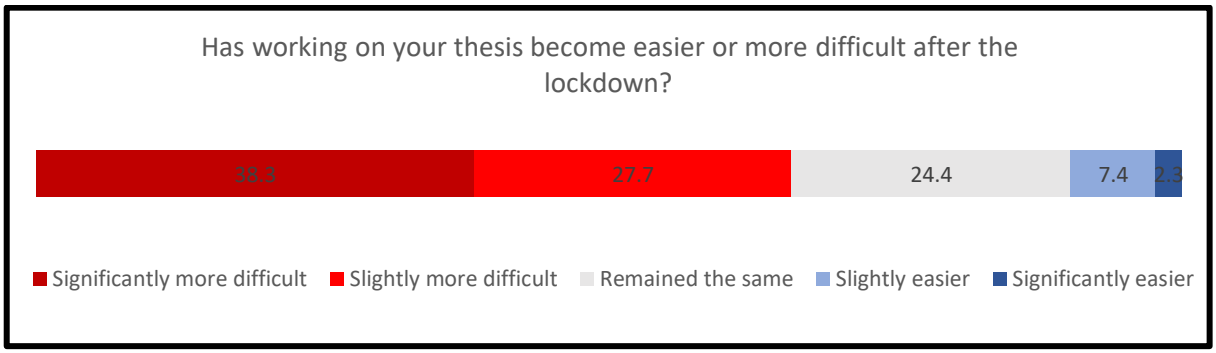

Figure 6. Difficulty/ease working on thesis after the lockdown compared to before the lockdown.

As for online activities related to the thesis period, some students reported that the online contact with the thesis supervisor worked well as a way to discuss questions and ask for and receive (written) feedback. Students appreciated their advisors' availability, the ease to have a meeting and an increased understanding for delays. Also, the peer-learning effect of small thesis groups did not decrease in the online setting. Students, for example, *"organized [a Zoom study session] as well, mainly for thesis writing [...] to give ourselves a library feel that we're not getting distracted. And actually seeing each other work instead of really working together and studying together."* (Focus group participant). More informally, students appreciated checking in with other students writing their thesis to exchange tips or as a progress check to simply ease one's own minds.

Recommendations thesis activities

Management & teaching staff level

- ✓ Allow for leniency in theses assessment when it comes to data collection processes and impaired methodology due to the COVID-19 restrictions
- ✓ Provide for more official and unofficial supervisor-student contact moments during a period of emergency remote learning
- ✓ Keep online availability of materials high and expand access where possible

Experiences with tutors and other teaching staff

The online tutor: a student perspective

As shown in Figure 2, 38.8 % of the students experience (much) more reliance on the tutor during online tutorials. Also, students see more need for tutor involvement in class. Students for example noted that, in the online setting, it is not the (student) chair but the tutor who is best able to provide

guidance and structure before, during and after the tutorial. Tutors that planned for substantial introductions and addressed group dynamics, helped to create a safe online space and were able to attend to and recognise individual needs. The qualitative data shows a strong connection between tutors investing time in the 'social glue' of group learning and individual student well-being. As with most tutor activities though, it remains a challenge to balance the above group qualities while not becoming overly dominant, causing too much student-tutor reliance.

Strong involvement of the tutor or not, online tutorials are considered to be 'less embodied' than offline sessions. Students miss the complexity of the physical space and context of the discussions, which is now being reduced to their devices:

"Usually my memory [...] connects things to the place, you know, what we said in class.[...] If this all goes to the very same device [...] it's just so much harder for me to digest all the information [...], it's all linked to the same device." (Focus group student).

This concerns the physical presence of people as well as the energy in the room that impacts the experience of a discussion. Moreover, practical issues also count towards this experience. Students mention for instance multiple people talking at the same time and the difficulty to let each other finish a sentence. This disembodied experience requires someone taking initiative and guiding the group more than in an offline setting. Whereas the tutor often takes up this responsibility it is beneficial to communicate and regulate what is expected from typical PBL classroom-roles and student preparedness in the online setting. A collaborative classroom atmosphere relies on collective etiquette, agreed rules, set expectations and adjusted formats for online learning. These are crucial aspects that were not evident during the online PBL experiences in period 5.

Students summarised the shift of roles and tasks in online tutorials as follows:

"[I did not like that] the tasks of the meeting leaders have completely shifted: during offline tutorials they would only guide the discussion and summarize points without weighing in with their own opinions. Now they seem to carry the whole tutorial on their backs, they ''hand out'' answers, which leaves less place for a discussion. At the same time, I understand the reason for this shift: it is much more challenging to exchange through an online platform than in real life." (*UM.online* survey)

"When I was chair, I prepared really, really well to have all the information to have all the answers for the learning goals and I felt like all the other people [...] did the same thing. [...]. So being well prepared chair really helped the tutorial." (Student focus group participant)

The online tutor after class

In the online setting, a student's perception of tutor commitment goes beyond his/her directive input in class and highlight tutor interest and engagement as key aspects for a positive online educational experience. Students appreciate tutors that demonstrate understanding of extraordinary individual circumstances and how those may impair a student's focus, presence or productivity. Related to this, data shows that students felt that similar individual (hardship) cases have not been treated equally between faculties and even in-between faculty programmes and courses. Also, the possibility to be 'in touch' with the tutor, to ask questions (e.g. short additional meetings) and receive answers during or in between classes, on content issues (e.g. review or feedback) or other study-related affairs (e.g. academic year progression), differs and proves to be important to students' state of mind. Without a doubt, the individual (professional) situation and didactic experiences and training of a tutor are emphasized in times of emergency remote learning, resulting in different levels of engagement, accessibility and communication. As can be seen in the engagement section of this report, 71.8% of the students report a decreased connection to teaching staff.

Recommendations experiences with tutors and other teaching staff

Management level

- ✓ Formulate a consistent faculty standard for corona-hardship clauses and more flexibility in recognition of individual circumstances
- ✓ Develop faculty or institutional guidelines for online tutor conduct, emphasizing directive, social and emphatic dimensions (co-developed with teaching staff)
- ✓ Train or inform course coordinators to relay online tutor guidelines to their course tutors

IV. ASSESSMENT

Assessment during emergency remote learning

The complications for assessment practices amidst the shift to online learning have been a prime topic of debate and subject of worry. Both within the student community and UM educational staff the COVID-19 repercussions on assessment have a direct effect on study progress and the maintenance of institutional quality standards. In an effort to avoid study delay, UM faculties have managed to realize a swift transformation from scheduled, often real-time, face-to-face, assessment practices to a diverse range of a-synchronous online assessment methods. In this transition, the student focus groups emphasize the importance of constructive alignment and creativity to assure better preparation, discussion and more consistent attendance.

As one student in a focus group recalls: *"They actually had to find a new way of assessment, where [...] we could partner up with two people [and] have three days to do an exam. [...] I actually really liked it because you learned new stuff while you were doing it."*

A shift to knowledge application

In many cases assessors were forced to rethink the type of questioning and knowledge tested. Most prominently, students have experienced an increase of a-synchronous or 'real-life' non-supervised assessment (e.g. take-home exams) to replace on-site central exams. While many of the solutions are summative in nature, students experienced a shift from knowledge reproduction to knowledge application and analytical assignments. Even though the exams were experienced to be harder and time-consuming, students from faculties that managed to replace summative multiple-choice exams with a-synchronous open book exams or essays are content with such forms of assessment as they relate better to their collaborative learning experience and future professional reality. This focus group student added: *"So like we had a couple of assignments as well. [...] And we proofread each other's papers and checked our sources. Which is more akin to [...] a professional environment, which is much more filled with collaboration than individual assessment. Like you don't pass a test every single day. No one cares. You just got to get the work done."* Students do ask, however, for more consideration with regards to the timespan for the exam, including lenience with upload and download time.

Formative assessment

The shift to emergency remote learning introduced more and different, mostly a-synchronous, formative assessment practices at UM. Many students experienced assignments such as weekly tasks,

collaborative papers or individual/group presentations throughout the course period during which the focus on the process of the effort counted at least as much as the final product. This allowed students to engage more in (meta-)reflective practices and peer-learning. Data from the focus groups indicates that students prefer formative assessment over traditional exams to show how they reached the course's intended learning outcomes:

"There were presentations in every single tutorial, so you really had to be present and that helps a lot because you kind of could not switch off and not attend and... Yeah, so that helped a lot, having regular assessments." (Student focus group participant)

"I think [weekly assignments] shouldn't be extra work because that doesn't work. But if they are useful as an assignment, they should also make it less work. If it aligns well with the tutorial [...] it helps you with preparing for that anyway. And you tick off the assessment by doing the learning that you're supposed to be doing anyway." (Student focus group participant)

As shown in the quotes above, students feel that formative assessment practices are more in line with the PBL approach to learning, and keep students motivated and engaged because the relevance of the learning becomes directly apparent. Formative assessment practises tend to give structure to students' learning and study practices in a situation where any kind of structure through face-to-face tutorials and lectures has disappeared. Through these formative assessment solutions students experience reduced anxiety since the reliance on multiple assessment moments avoids dependence on one high-stake assessment moment and reduces the risk to fail due to technical/connectivity issues. One important point of attention is the distribution of the workload. Students report examples of many courses switching to weekly assignments, which at times resulted in having too many simultaneous deadlines.

Online proctoring

Some programmes could not find a viable formative or a-synchronic summative assessment substitution for their final course examinations and organised their central exams through online proctoring. Both in the open answer sections of our survey as well in the focus groups, students noted downsides and upsides of using online surveillance software. The surveillance procedure, starting up to 30 minutes before the beginning of the exam, was found to be stressful and regarded as an infringement to students' personal space. The fear that connection issues could hamper the performance or lead to failed exam was considered equally stressful. On the other hand, quite a few students noted a positive effect through the less stressful atmosphere and noted that they were calmer before and while taking the exam.

This focus group student shows his/her ambiguity towards online proctoring: *"[...] in the end we had our exam online with our cameras turned on sharing your screen. [...] On the one hand, it was kind of comfortable to write an exam at home because it was just like less anxiety. [...] But on the other hand, I was really nervous about my internet connection failing or anything else that could happen, which would make me fail the exam, even though it wasn't my fault. I have mixed feelings about that, and I hope that I will never have to an online exam again." (Student focus group participant).*

A big hurdle: Communication and Planning

As part of the swift transformation to alternative, online assessment variants, communication and information about the new assessment plan and methods was experienced as insufficient according to a substantial number of students. Uncertainty about a new format of the exam made it much harder for students to prepare for it. The level of expectations was often unclear and new technical requirements and dependence led to additional exam stress (e.g. additional time it takes to upload assignments, stable internet connection). In these situations, more so than ever, students appreciated

tutors and course coordinators that showed flexibility and understanding; being empathetic but consistent and clear about the assessment format and deadlines.

Recommendations assessment

Management level

- ✓ Offer support for PBL-proof a-synchronous summative and formative assessment formats in the context of online learning (e.g. availability of best practises, educational support in designing exams)
- ✓ Offer training for programme directors and course coordinators to adjust the programme/course assessment plan in the context of emergency remote learning
- ✓ Consider workload increase for course coordinators/tutors and provide for more compensation and/or support
- ✓ Promote and discuss 'programmatic assessment' on institutional and faculty management level
- ✓ Avoid future practises with online proctoring unless no alternative can be found

Teaching staff level

- ✓ Think and rethink how your course's intended learning outcomes can be assessed in a more formative way
- ✓ Use weekly assignments to keep students motivated and to reduce dependence on central high-stake assessment moments.
- ✓ In case of parallel courses, discuss and coordinate deadlines and workload peaks with your colleague to avoid unintended overburdening of students
- ✓ Be more lenient with regards to deadlines
- ✓ Be conscious of student's individual circumstances
- ✓ Communicate assessment plans and expectations in a timely and structured manner
- ✓ Pro-actively address student questions regarding course assessment in class.
- ✓ Offer and discuss sample questions in tutorials

V. SELF-REGULATED LEARNING DURING THE PANDEMIC

PBL at Maastricht University demands substantial self-study activities from students and already before the switch to online education, required high levels of autonomy from UM students. Based on research about self-regulated learning at UM, our survey has devoted a number of questions to measure specifically students' resource management strategies, including attentional regulation, effort regulation, time management, motivation, and effort- and time-investment. These strategies have been found to be important success factors in highly autonomous, self-directed learning environments. We were interested in how these have been impacted by the remote setting. Both survey and focus group results show that the ability to focus as well as general motivation to study are major concerns reported by the students.

As one student puts it: *"It's harder to study at home. I mean, I also take some time with my parents when I'm at home. I feel responsible and then I also start doing household duties that normally when I'm in Maastricht I wouldn't do… Yeah, I think everything is a little more distracting." (Focus group student participant)*

On the quantitative side, as shown in Figure 7, students were in general less able to regulate their attention, manage their energy during self-study, were less able to manage their time, were less motivated and put more effort and time in their self-study, compared to the situation before the crisis.

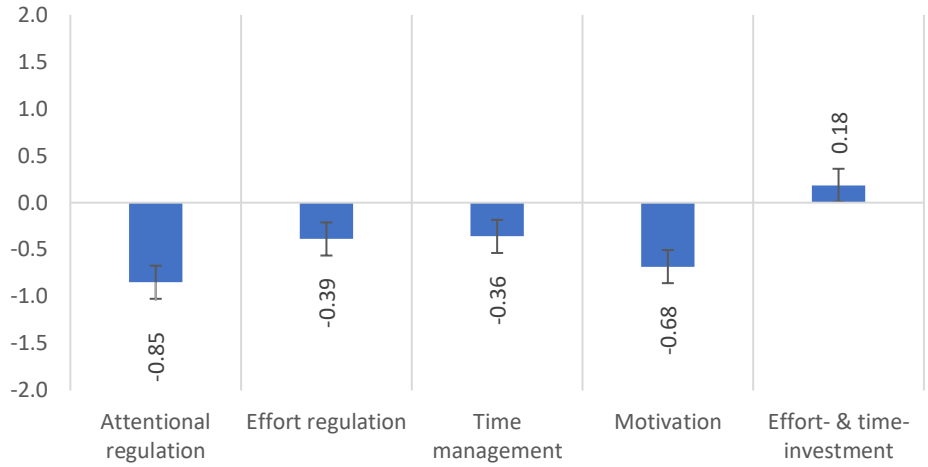

Figure 7. Mean scores of the scales attentional regulation, effort regulation, time management, motivation, and effort- and time-investment, range from -2 (much less) to 2 (much more). For Cronbach's alphas, please refer to Appendix 7.

The frequency distributions at item level (see Appendix 8-12) indicate for example, that 66.5% students were less able to concentrate on study-related tasks and about 70% got more often distracted. As already shown in the previous chapters, the survey data confirms that about 60% of the students are less motivated to prepare for their classes and exams and to keep up with the materials. 46.5% of the students have invested more time and effort into their self-study. At the same time, 59% were less able to stick to their study schedule and found it difficult to adapt their study routine to the new situation. Finally, about half of the students were less able to manage their energy and to relax in their free time, and felt more exhausted than before the crisis.

More self-study, less focus

When it comes to the level of focus, the qualitative data confirms the quantitative data. A large majority of the students in the focus groups as well as in the survey's open questions report that they were more distracted at home and found it harder to focus. This in turn affected their ability to prepare well for the tutorials, which students observed in themselves and in their peers. Many factors were mentioned that decreased students' ability to focus on and motivate themselves for their study-related tasks: too much screen time, a lack of appropriate study spaces, family situations, a lack of structure, feeling less engaged and unable to deal with the situation by themselves and feeling overwhelmed due to a (perceived) higher workload. Students remarked a couple of things that helped them focus, for example seeing other people work and having a dedicated study space (where possible). Moreover, students that requested support from study advisors or attended webinars were positive about these levels of support, yet also remarked that those students that need such services the most are often not aware of the availability or unable to use them.

As one focus group student puts it: "It was very difficult to get things done to get on some sort of schedule. I had a really difficult time adjusting to this life from being at home working on everything. I had a talk with that with the study advisor who gave me some very helpful tips."

We also asked students to rate their 'self-directed learning', which was specified as: "the possibility of shaping your own learning process, e.g. through individual planning, self-study and defining your own learning goals", as part of the PBL principles. The survey shows that 57.5% of the students describe their learning to be more self-directed (21.9% rated it (significantly) less, 20.6% about the same). On the one hand, many students very much appreciate this flexibility that comes with online learning,

such as planning one's own time, no mandatory attendance, recorded lectures, switching tutorials and online availability course materials. This reduces stress and allows for more time to study and paying attention to non-study related activities. On the other hand, this comes with a responsibility and seems to be equally stressful (which could be good learning experience in itself). Together with an increase in perceived workload and a decrease in the ability to manage their own resources, students often report that they feel left alone. Students hence tend to appreciate clear structures that reduce the level of self-direction or, at least clear structures and explanation to guide self-direction and take away some of the stress of 'freedom'. Along with the expected increased tutor involvement in online tutorials, students also expect more directions from teaching staff towards student self-study activities regarding structure, clear planning and expectations.

Recommendations self-regulated learning

Management level

- ✓ Offer support to students that deal with uncertainties regarding their self-regulated learning and disseminate availability and contact opportunities of study advisors and mentors.

Teaching staff level

- ✓ Provide students who struggle with more structure to provide support in time- and distraction-management
- ✓ Communicate clearly what you expect students to do as part of their self-study and emphasise student responsibilities in (emergency) distance learning
- ✓ Stimulate students to work together with peers

VI. ENGAGEMENT

In order to get an insight in the level of student - UM campus connection in emergency remote learning, we defined the level of student engagement based on four indicators: student connection to other students, student connection to teaching staff, knowing what to do to succeed and interest in study. As shown in Table 2 and Figure 8 students overall felt less engaged during period 5:

Experienced (significantly) less connection to students	83.9%
Experienced (significantly) less connection to teaching staff	71.8%
Experienced (significantly) less knowing what to do to succeed	48.8%
Experienced (significantly) less interest in their study	32.0%

Table 2. Percentage of students experiencing (significantly) less engagement, per item.

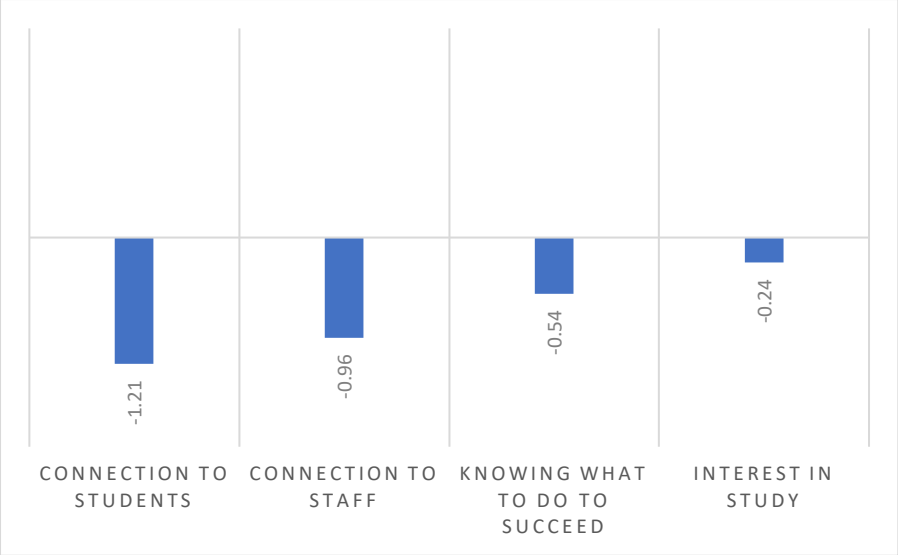

Figure 8. Mean engagement scores for all four items, range from 2 (increased a lot) to -2 (decreased a lot).

Looking at the first indicator 'connection to students', when confronted with a sudden turn to online education in period 4 and 5, our data shows that the social dimension of studying at university has come to a standstill. When asked what students miss most about the on-campus setting, a large majority of the answers refer to the inability to connect to their fellow students. 'Social interaction', 'informal conversation', 'face-to-face chats', 'studying together' are all examples of the socio-physical dimension of on-campus education that, to many students, is the backbone of their student experience and, by default, can't be mimicked very well in an online setting. Whereas online (learning) applications do make it possible for students to be in touch, it lacks the authenticity and informality of non-scheduled exchange. Students have been creative though to uphold the connection with peers through (silent) zoom study sessions, game nights and vlogs.

As summarised by a focus group student: *"What I miss most was just talking about kind of trivial things, to be honest, [...] like during a break in tutorial. You say 'how was your weekend?' or something like that, you know, just unimportant stuff. [...] Or just like turning to your neighbor and being like, Oh, that was cool. What they said, or something like that. You don't really get that online because […] if you say something [...] you say it to everyone. It has to be something important. You can't say something trivial."*

The lack of social contact also affects the collaborative quality in the classroom. Students indicate that it is important to know your fellow students in order to have a productive tutorial and develop strong group dynamics. The informal elements (chatting before class or during brakes) are greatly reduced and less automatic in online tutorials. Students miss these things because they build a group feeling, mutual trust and shared responsibility for the learning process: *"Please don't keep too much of the online education after this crisis is over! [...] With online education, you lose the contact to the other students and the professor!"* a student noted in the survey. The overall learning experience feels therefore more detached and impersonal. The student interest in their study programme seems less affected and for many students remained the same (54,1%).

Recommendations engagement

Management-level

- ✓ Consider breaking up the first-year BA student population into smaller batches and organise online events where these sub-cohorts can meet

- ✓ Connect study advisors to educational design and policy in the faculty, e.g. inviting them to attend meetings of programme committees and educational bureaus

Teaching staff level

- ✓ Consider rules or set expectations for tutorial attendance to improve consistency in student turn-out in the course's first tutorial session
- ✓ Install or increase tutor online open office hours for individual tutor-student contact and promote online tutor availability
- ✓ Promote informal conversation. Encourage students to sign in to online tutorials 15 minutes before the actual start and leave the tutorial open until 15 minutes after end of the discussion

VII. WELL-BEING

Well-being and COVID19

It is undisputed that the COVID19 pandemic and the related measures have impacted and disrupted society and individual lives. In order to reflect on the impact of the current crisis on students' and staff state of mind and as a potential source affecting educational experience, we make use of the concept of *well-being.* Both in our survey and in our focus groups we included specific questions on well-being, allowing us to look for correlation between students' state of mind and study performance, e.g. sense of isolation and decrease in social interaction in the classroom. In that sense, well-being (and related concepts like students' self-regulated learning or engagement), especially in the current situation, should not be seen as separate from education but integral to it as what happens outside of UM is also reflected in the education, thereby often amplifying or simply extending what students and staff experience in their private lives. We treat the results in this section with care and avoid establishing causalities: well-being may affect the educational experience just as much as the other way around.

Well-being figures

The qualitative data resulting from our survey and focus groups strongly suggests that the crisis overall has a negative effect on students' general well-being, motivation and ability to focus. Amplified by the quantitative data, it is shown that since the beginning of the global health crisis, and UM's switch to online education, students rate their well-being (much) worse than before (see Figure 9). 53.0% of the students feel that their well-being has (much) worse than before the beginning of the global health crisis (32.2% feel about the same and 14.8% of the students rate their well-being as (much) better than before).

Figure 9. Well-being scores compared to before the COVID19 pandemic

This shows that a large majority of the students experience lower well-being scores, which correlates with students' educational experience. As can be seen in Figure 10, lower ranking of the educational

experience correlates with lower scores in well-being (and more negative well-being symptoms). The reverse is also true: those who rated their educational experience higher, also reported higher well-being scores for themselves since the beginning of the health crisis.

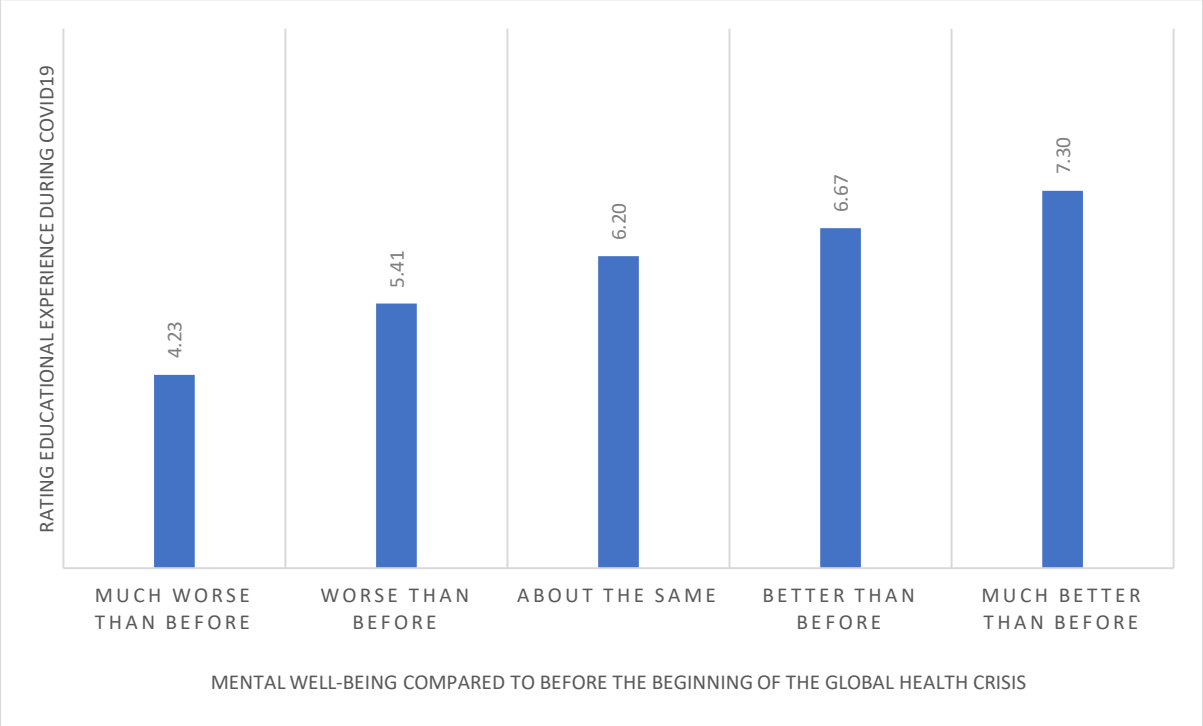

Figure 10. Mapping rated educational experience after beginning of the crisis (1-10) by well-being levels.

Students fear study-delay and perceive having more stress and uncertainty about course assessment, while they also sense that the overall workload and difficulty of their studies have increased. At the same time students struggle to find and keep a good work-life balance and find it difficult to detach the two. They overall signal a loss of those things that gave them structure to their study and life (e.g. friends, sports, mandatory tutorials, study in the library). The lack of physical exercise, a sub-optimal learning environment (e.g. bad chairs, aged hardware) and screen fatigue lead progressively to physical discomforts and in turn affect motivation to study. This survey respondent recalls some additional challenges when proper learning spaces are not available: *"The neighbors [are] pretty noisy and there is a lot of construction work outside the house which makes it even harder to concentrate and is going to be very annoying and distracting while doing the exams."*

Table 3 shows that 66.7% of the students reported to be less motivated, 63.9% less concentrated and 60.3% perceive increased procrastination and distraction (by oneself but also from family members, housemates and neighbours). These students describe their loss of motivation in the survey:

"It's more general things like [...] anxiety and in general a lack of motivation, because I had the feeling that it sort of stopped me in my tracks [...]. I had a bit of a plan before this. And then all of that sort of fell apart."

"I don't like being forced to work from home every day. Home is my space to rest, and I live in an incredibly confined space with another human being. Keeping motivated to work is difficult, and I am constantly feeling like I am missing things or not working hard enough."

Moreover, many students experience an increase in severe symptoms, too. 43.5% experience more loneliness, 38.0% experience an increase in anxiety and 7.4% of the students experience even psychosomatic complaints (see Table 3). In that respect online education has become one of very few

social outlets for students and a provider of some sort of structure. As mentioned by this survey respondent: *"[I liked] that we integrated a personal touch (How is everyone doing? What is the best thing that happened this week? What are you struggling with?"*

As stated above, students appreciate online tutorials where they can connect teaching staff, (informally) reach out to fellow students and take digital breaks as a change to the efficient one-hour meetings mainly focused on content transmission.

Because of the global health crisis I experience an increase in the following:	% of respondents
Lack of motivation	66.7%
Lack of concentration	63.9%
Procrastination	60.3%
Stress to prepare my education	44.5%
Loneliness	43.5%
Stress to prepare for assessments	42.5%
Anxiety	38.0%
Study delay concerns	35.2%
Psychosomatic complaints	7.4%
Other	7.1%
None of the above	6.7%

Table 3. Negative effects of the corona-crisis (multiple answers possible).

Well-being: More family time

Still, some students also recognize improvements in their mental state, e.g. in terms of having more free time due to less travel time and being able to self-pace their study efforts. 57.4% hails the increased (quality-)time and improved contact with family members (see Table 4). As one student notes: *"The possibility of doing my studies at home has made my anxiety lower."*

The increased contact with people in the same household also has a downside. Especially in cases where students have been forced to take up a caring role for sick members of the household, the survey results show how additional household duties negatively affect students' ability to perform at university.

While students indicate in the qualitative data that support networks like friends, family and housemates positively impacted their well-being and educational experience, the quantitative data doesn't allow for strong conclusions in either direction. Checking for the home situation, country of residence, year of study and other general control questions, it is generally not clear why some students rated their well-being better or worse. Throughout the data, students comment that the collective spirit during the change to emergency-remote learning is experienced as uplifting and energising. Peers and tutors often placed more attention on well-being and were more generous with oneself and others. As this student puts it: "*"During the pandemic my online classes have helped me to maintain a slight amount of structure in my life and I enjoyed talking to other people."*

Which aspects have positively impacted your mental well-being because of the global health crisis?	% of respondents
Contact with family	57.4%
Physical exercise	46.3%
Digital contact with friends	36.2%

Less stress	17.2%
More structure	9.9%
Less anxiety	7.9%
Other	8.1%
None of the above	13.9%

Table 4. Positive impact on well-being (multiple answers possible).

Well-being, engagement and self-regulated learning

As stated above, the large majority of students experienced an increase in self-directedness, and with that a greater personal responsibility for their own learning progress and reliance on intrinsic motivation. Equally, the section on self-regulated learning already showed that many students struggled to motivate themselves, remain focussed and manage their time effectively. The lack of a premeditated structure and attendance rules can also be demotivating to those students that already find themselves in a socially isolated position. Specifically, when asked about which aspects negatively impacted students well-being, most participants (59.6%) mentioned a lack of structure (see Table 5), together with uncertainty about progress of the academic year (55.5%). In addition, students mentioned isolation, (48.9), a high workload (46.2%) and loneliness (43.5%). This begins to outline how interlinked well-being, engagement, and students' self-regulated learning are - with one another and the educational experience overall.

Which aspects have negatively impacted your mental well-being because of the global health crisis?	% of respondents
Lack of structure	59.6%
Uncertainty about the progress of the academic year	55.5%
Isolation	48.9%
Workload	46.2%
Loneliness	43.5%
Financial issues	18.9%
Domestic situation	18.9%
Illness	7.0%
Other	7.4%
None of the above	9.5%

Table 5. Negative impact on well-being (multiple answers possible).

This is supported by the correlations between the different scores on student's remote self-regulated learning skills (Mean = -0.47, SD = .74) and well-being (Mean = -0.46, SD = .95). The correlation is significant and positive (.54), which indicates that students that report lower levels of well-being are also less able to regulate their self-study (and the other way around). The highest positive correlation is, for example, with effort regulation (.55), i.e. students feel more exhausted and are less able to manage their energy and relax. This means that when students rated their well-being as worse, they were also less able to regulate their efforts or, again, the other way around. Attention regulation (i.e. items being related to concentration and distraction) (.48), time management (.48) and motivation (.43), similarly show a significant and positive correlation with well-being. Equally, there is a correlation between student's remote self-regulated learning skills in general, and the educational experience (.56), and engagement (0.61).

There is also a positive and significant correlation of student experience with student engagement (.58) as a whole, which indicates that students who feel more or less engaged also rated their educational experience overall as better or worse (respectively). Lower engagement scores over all four items (Mean = -.07, SD = .66) also correlate with an overall decrease well-being since switching to online learning (and the other way around) (.45). A visual representation of the engagement items

mapped on the well-being level is illustrated in Figure 11. This shows again that students who state that their mental well-being is 'much worse than before' feel significantly less engaged (Mean = -1.25) than those who rate their well-being as 'much better than before' (Mean = 0.06).

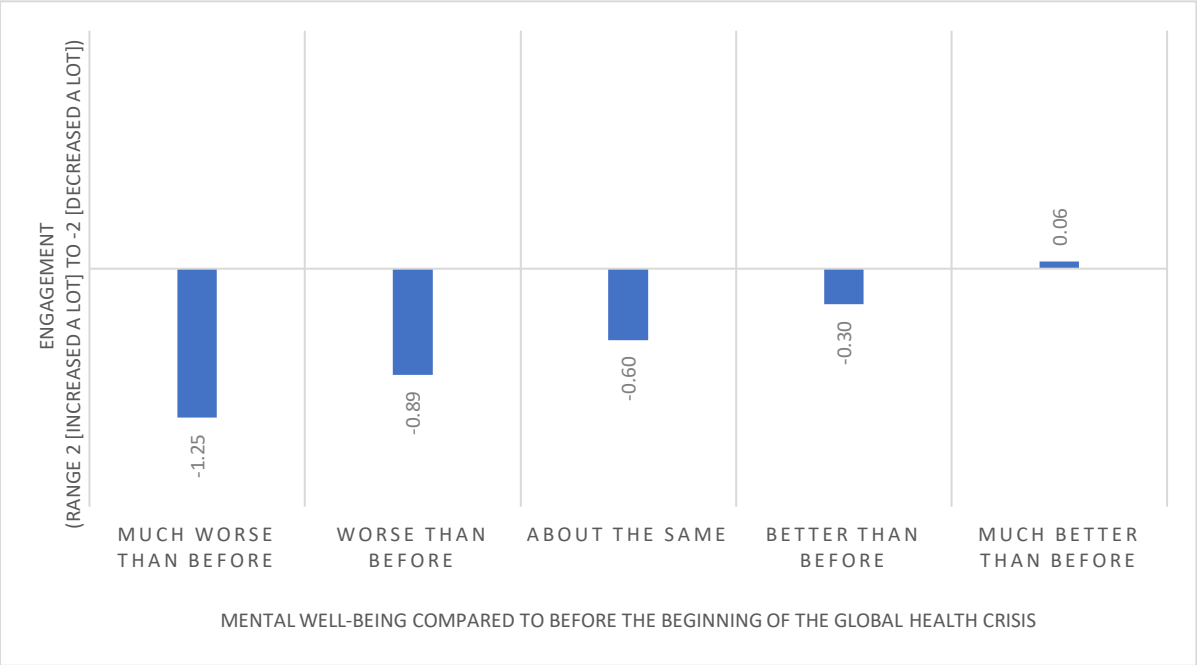

Figure 11. Engagement mapped on mental well-being compared to before the crisis (range -2 to 2)

This emphasises the need for support related to students' self-regulated learning and student engagement as added dimensions to existing well-being support measures. Going back to the Figure 10 at the beginning of this chapter, which shows the correlation between well-being and educational experience, in turn shows that well-being cannot be addressed in isolation from educational practice: if students aren't doing well, they also aren't learning well (and the other way around).

Recommendations well-being

Management-level

- ✓ Formulate a consistent faculty standard for corona-hardship clauses and allow for flexibility in recognition of individual circumstances
- ✓ Develop faculty or institutional guidelines for online tutor conduct, emphasizing directive, social and emphatic dimensions (co-developed with teaching staff)
- ✓ Refer students to workshops related to well-being at UM service centres and faculties
- ✓ Clearly communicate the existence of the faculty's study advisor(s) and give them more online visibility and accessibility, e.g. through online appointment systems.

Teaching staff level

- ✓ Provide students with a weekly (minimal) structure to assist self-study and tutorial and assessment preparation
- ✓ Encourage mentors or academic advisors to follow-up on students that have indicated having (mild) mental health issues related to remote learning
- ✓ Broaden (online) mentor/academic advisor discussions beyond strictly academic topics to identify and support individual study needs and wellbeing concerns

VIII. TECHNOLOGY & SUPPORT

Tools

With the sudden shift to online education almost all UM students and teaching staff became dependent on a select number of online learning applications (OLA) to participate in online education. 95,5% of the students have used Zoom and, next to that, about 70% have worked with Blackboard Collaborate Ultra and WhatsApp to take part in or coordinate their learning. Table 6, shows the total usage overview of online learning applications.

The preconditions for optimal usage and didactic use of online learning applications like Zoom or Blackboard Collaborate Ultra seems much more troublesome. Students practically prefer Zoom over Blackboard Collaborate Ultra, as it allows all faces to be visible in one screen and provides a more stable connection, yet they criticise Zoom's dubious privacy regulations. Discord or Slack are mentioned as alternative programmes to promote interaction, while not giving up the advantages of Zoom. However, over the last months, students have acquainted themselves with Zoom (95,5% vs max. 69,5% collectively experiencing any other tool) and the growing uniformity and ease in use of the platform may outweigh a diversity of options for general educational application.

I have used the following online applications for my educational activities in period 5	% of respondents
Zoom	95.5%
Blackboard Collaborate Ultra	69.5%
WhatsApp	69.2%
Skype	30.1%
Slack	11.6%
Google Hangouts	7.5%
Feedbackfruits	6.6%
Microsoft Teams	4.6%
Other	6.8%

Table 6. Online applications used (multiple answers possible).

Given the circumstances, students appreciated a number of OLA-features to organize classroom discussions that are otherwise not frequently used within an on-site setting. When it comes to the quality of group discussions, apart from some technical critiques and lack of common etiquette, students hail Zoom for its screen sharing, hand raising, chat and breakout room functionalities. Students enrolled in mathematics courses remark for instance that with proper equipment (in this case tablets, screen sharing) has made it much easier to share complex calculations to each other and discuss them accordingly. Digital notetaking during tutorials has sharply increased, particularly through the use of Google docs. With the absence of physical whiteboards, digital whiteboards enhanced the role of the scribe as well as bringing another collaborative element into the tutorial.

UM should monitor that the number of different OLA's that students are required to use is not excessive. This way students and staff can acquaint themselves with selected and UM-supported OLA's and properly integrate different functionalities into the design of the course. Some students complain that they have to install and sign up for too many different tools. Especially heavier programmes overload their hardware. Other students report that tutorial discussion boards have not been used at all even though it would have been an appropriate medium to the type of discussion. For well-functioning, a-synchronic discussions it is necessary that the discussion boards are an integral

part of the course, moderated by teaching staff, and use project-tools like Slack or Discord over Blackboard.

Availability of online materials

Last but not least, the online setting also facilitates better use of online course materials and alternative resources such as podcasts, YouTube, Ted Talks and online articles. On the other hand, students remark that not all study-related items such as coursebooks or literature were available online, which is detrimental to homebound self-study and exam preparation since there are no alternative means to acquire those items otherwise.

Technical Support

When in need of technical support, students report that they reach out to fellow students or teaching staff (78.7%), rather than the available technical support desks at Maastricht University (see Table 7). Our qualitative data suggests that students experience the available helpdesks as overburdened, slow and generic in their assistance. Students suggest to: "... have a specific helpdesk that can deal with online issues"; a place that students can turn to and get assistance on the spot.

In case of technical issues with online education, where did you ask for help?	% of respondents
Fellow students	45.4%
Course coordinator	33.3%
Student Service Centre	2.3%
Faculty helpdesk	2.2%
Helpdesk online education	1.7%
Other	3.2%
Does not apply	39.8%

Table 7. Source of help in case of technical issues (multiple answers possible).

Connectivity issues are one of the most reported nuisances impairing students educational experience. Students state that having an unstable internet connection hinders them in participating in tutorials. This is often the case when multiple people (e.g. in a student house or parental home) have zoom meetings at the same time. Bad connection has a direct effect on their participation because it can force students to turn off the webcam or hinders them in speaking and listening to others. The dependence on a good internet connection is therefore stress inducing and makes students feel more detached from the course. Other technical issues as indicated above, link to insufficient hardware or the 'heaviness' of certain software programmes, OLA's and downloadable files such as recorded lectures.

With the use of online applications, a minority of the students have raised privacy concerns, especially with the use of Zoom and online proctoring software/procedures. Even though a relatively small number of students voiced these concerns, it signals the need for more communication and information about how UM intends to protect student privacy in the online learning setting.

In the open answer section of the survey, mention the need for 'step-by-step' guidelines for the several OLA's that they are required to use. This to assist those students that are less tech-savvy and inform the student population about the OLA's' functionalities and full potential. As one student in our survey put it: "[provide] some FAQs and guidelines [for the] tool the university made available".

Recommendations technology and support

Management-*level*

- ✓ Provide central overview of UM-supported online learning applications (OLAs) and technical and didactic tips to integrate OLAs in PBL education
- ✓ Train and inform course coordinators to effectively integrate OLAs in their course
- ✓ Install a central 'just-in-time' technical helpdesk for teaching staff to assist in the integration of OLAs and solve any technical problems that may occur
- ✓ Empower tutors to recognize the relationship between a failing internet connection and weak participation and allow for leniency in any kind of related performance evaluation of assessment
- ✓ Supply teaching staff with tech-savvy student assistants that can assist teaching staff with technical issues in more depth
- ✓ Search further possibilities to support students and staff with connection and internet issues, e.g. by expanding possibilities to work onsite (esp. for proctored exams)
- ✓ Provide 'step-by-step' guidelines for commonly used online learning applications

Teaching-staff-level

- ✓ As part of an online tutorial etiquette, students should inform the tutor and peers about technical questions and potential connection issues (in the beginning of the course)
- ✓ Provide contact for help with technical support
- ✓ Provide clear communication at the start of any course about the use of online learning applications, privacy issues and how UM addresses these
- ✓ Where necessary: provide students with tips and tricks to optimize the internet connection during emergency remote learning, e.g. making plans with family to reduce heavy traffic where possible or when disrupted turning off the camera to reduce bandwidth

IX. COMMUNICATION

When it comes to communication during the Corona-crisis, students have experienced the whole spectrum of communication output and frequency, from silence or minimal communication to information-overload. When it comes to the sender, students most appreciate to receive updates from their tutor or course coordinator via e-mail. To avoid information overload, students prefer clear and well-summarised messages, rather than daily communication, and preferably via one channel. Checklists and alike seem to be particularly useful. Also, the responding time from teaching staff to student e-mails should be shorter during the crisis.

Students also prefer 'honest' communication. There is a perceived discrepancy between how faculties are in control of the situation (e.g. measurements regarding COVID19 or the switch to online education), yet when students report to have an issue, they don't feel heard and consequently do not receive the expected assistance.

Recommendations communication

Management and Teaching-Staff level

- ✓ Keep communication sources as close to the student population as possible (tutor/course coordinator over programme director, etc)
- ✓ Avoid anonymity in faculty communication:

- ✓ Ask programme directors to communicate all general faculty and institutional policies regarding emergency remote learning,
- ✓ Ask course coordinators to communicate all educational matters in relation to emergency remote learning
- ✓ Provide communiques in bullet-point style with effective hyperlinking
- ✓ Keep the communication frequency to a minimum

X. APPENDICES

Appendix 1.

Top 6 lessons learned *UM.online* student evaluation

Summarized below, based on the preliminary findings from the *UM.online* student survey and recent insights in the *UM.online* focus groups, we draw a couple of clear lessons from the student perspective of online education at UM. First and foremost though, based on the findings and conversations in the focus groups we want to extend a big compliment to UM teaching staff. Students highly appreciate the work done by teaching staff to make education possible and are impressed by the way online education was given shape in such a short timeframe.

1) Social and informal contacts matter

- Well-being and a sense of engagement are affected by the lack of social connection.
- When students do not know each other, it is harder for students to interact during a tutorial. In effect, the lack of social and informal contact negatively affects learning and group dynamics in class.
- Students miss the 'break' and the informal chit-chat before and after tutorial to get to know each other.
- Students perceive the online setting as efficient in terms of content delivery, whereas the level of engagement, focus and inspiration are much lower.
- The engagement of the tutor and the way (s)he organises the tutorial plays a role. Respondents appreciate a 'caring' tutor. A simple 'how are you doing?' or an extended introduction at the beginning shows empathy and allows students to talk about effects of the Corona-crisis on a personal level. Tutorials are one of very few outlets for isolated students.

2) Perceived mismatch support offer and actual support

- Central support and care as e.g. communicated by the Executive Board 'Corona-updates' is not always available or translated to a faculty/programme/course level.
- Students make an appeal for more recognition of personal, Corona-induced, circumstances.
- Students feel that clemency rules are not consistently applied within and between faculties.
- Students wish for more recognition of fallibility of technology and wireless connections.
- Additional support wishes: opportunity for casual conversation with and between students and functioning facilities such as learning spaces and printers.

3) Recorded lectures highly appreciated

- Irrespective of Corona, recorded and live online-lectures are considered a major innovation of UM education.
- Recorded lectures lead to better understanding of the learning material since it allows students to (re)watch, rewind and pause the lectures at their own pace.
- Many formats for different intended learning outcomes possible (e.g. knowledge clips, interactive lectures) with one main pre-condition: provide recordings of high quality.
- Students still see value in live-offline lectures.

4) The ambiguity of more flexibility

- Lack of structure and work rhythm increases stress and anxiety while it reduces motivation.
- No information balance: the lack of information or too much information is frustrating.
- On the other hand, students are enthusiastic about the perceived freedom to plan their own learning activities.
- Student perceive an increase of self-directed learning.
- Students perceive an increased ability to plan and reflect on their learning.

5) Technical and connectivity issues hamper group dynamics

- The physical proximity and non-verbal aspects of face-to-face PBL is missed in online education.
- Many students experience group discussion where a number of students keep their camera and microphones switched off. This is partly due to connection issues and partly due to lack of habit and collective etiquette.
- Teaching staff should be more directive and set expectations for online presence.
- Teaching staff should (be able to) show more recognition when students can't be present or participate due to technical issues.

6) Formative over summative assessment

- Alternative examination such as take-home/open-book exams, albeit formative or summative, is regarded as a more 'real-life' or 'professional-setting' type of experience.
- Students either experience a lack of information or an information-overload regarding assessment criteria and expectations.
- Online proctoring is regarded as very stressful.
- Practicals and simulations need better alternatives in an online setting or be carried out offline (in some way). Erasing these assessment methods from the assessment plan is not an option for students.
- Students appreciate the course assessment to be split up in weekly assignments.
  Weekly assignments:
    - Motivate
    - Provide structure and focus
    - Avoid dependence on one high-stake assessment moment and reduce student drop-out due to technical/connectivity issues
    - Allow for 'assessment *for* and *as* learning'
    - If group oriented, allow for more collaboration with peers
    - Are less high-stake and reduce stress and anxiety
    - Produce more workload for both students and teachings staff

Appendix 2.

***UM.online* Student Survey**

What do you think about online education?
It is expected that online education will remain very important after the crisis. We would therefore like to hear how you have experienced online education in period 5. What can we learn from this shift from offline to online education? What works? What doesn't? And what can be improved?
Also, we would like to know if you encountered any technical issues and whether the global health crisis and the transition to online education have affected your well-being.
For more information on the project and the project team, please visit our website.

This survey also serves as invitation to two follow up projects:

- A focus group, following up on this questionnaire, about experiences with online education.
- Further research on learning behaviour and study skills.

Thank you for your participation!

INFORMED CONSENT

Please read the **information letter** about the study, before starting the survey:

Information letter *UM.online*

By clicking the box below, you agree that you are at least 18 years old, that you have read and understood the information about the study in the information letter and that you voluntarily agree to take part in it.

☐ I agree to participate in this study

This survey asks for the experiences of **students**.

Did you participate in any online educational activities at Maastricht University in period 5 as a student (i.e. tutorials, lectures, thesis work)?

☐ Yes
☐ No

What is your level of study?

☐ Bachelor
☐ Master

When did you start your in your current programme at Maastricht University?

☐ Before 2015
☐ 2015/16
☐ 2016/17
☐ 2017/18
☐ 2018/19
☐ 2019/20

What is your age?

_____

What is your gender?

☐ Female
☐ Male
☐ Other, please specify: _____

In which programme are you currently enrolled?
If you are enrolled in one or more programmes, please select the one that you consider more important for yourself.

▼ Arts and Culture ... University College Venlo

Are you a regular UM student or are/were you a student on exchange at Maastricht University from another university?

- ☐ Regular UM student
- ☐ Incoming exchange student

For incoming exchange students, what did you do after the start of the global health crisis?

- ☐ I stayed where I was.
- ☐ I moved back to the country of my home university.
- ☐ I moved elsewhere.
- ☐ Other, please specify: _____

Did you do your Bachelor's studies at UM?

- ☐ Yes
- ☐ No

For Master Students:

- **At which faculty are you currently enrolled?**

- **In which programme at FHML are you currently enrolled?**
- **In which programme at FASoS are you currently enrolled?**
- **In which programme at LAW are you currently enrolled?**
- **In which programme at FPN are you currently enrolled?**
- **In which programme at FSE are you currently enrolled?**
- **In which programme at SBE are you currently enrolled?**

Which of the following best describes your situation just before UM had to close because of the global health crisis?

- ☐ I lived in or near Maastricht in student housing.
- ☐ I lived with my parents/family in or near Maastricht.
- ☐ I lived further from Maastricht (> 15 km) in student housing.
- ☐ I lived further from Maastricht (> 15 km) with my parents/family.
- ☐ Other, please specify _____

What did you do after UM closed?

- ☐ I stayed where I was.
- ☐ I moved back to my home country.
- ☐ I moved elsewhere in NL.
- ☐ Other, please specify: _____

Do you consider the country where you currently reside your home country?

- ☐ Yes
- ☐ No

In which country do you currently reside?

_____

Who do you currently live with?

- ☐ Friends or housemates
- ☐ Family
- ☐ Partner
- ☐ I live on my own.
- ☐ Other, please specify: _____

This section is concerned with your **general educational experiences**, with a particular focus on period 5.

UM intends to provide small-scale, student-centered and active PBL-education.
Please rate your overall educational experience at UM before the global health crisis and during the global health crisis.

I rate my overall experience with education at UM with the following grade:

	1	2	3	4	5	6	7	8	9	10
BEFORE the global health crisis	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
DURING the global health crisis	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

The following questions are about **your experiences** with online education in **period 5**.

If you compare your PBL education before the global health crisis to your online education in period 5:

	Significantly less	Slightly less	About the same	Slightly more	Significantly more
How collaborative was it in period 5?	☐	☐	☐	☐	☐
How self-directed* was it in period 5?	☐	☐	☐	☐	☐

* Self-directed learning refers to the possibility of shaping your own learning process, e.g. through individual planning, self-study and defining your own learning goals.

Did you take part in online tutorials in period 5?

- ☐ Yes
- ☐ No

Compared to offline tutorials, the duration of your online tutorials was...

- ☐ Significantly shorter
- ☐ Slightly shorter
- ☐ About the same
- ☐ Slightly longer
- ☐ Significantly longer

Compared to offline tutorials, how many students attended the tutorial sessions in general?

- ☐ Significantly less
- ☐ Slightly less
- ☐ About the same
- ☐ Slightly more
- ☐ Significantly more

Compared to offline tutorials, to what extent did you rely on your tutor during your tutorial sessions?

- ☐ Significantly less
- ☐ Slightly less
- ☐ About the same
- ☐ Slightly more
- ☐ Significantly more

Did you attend or watch online lectures in period 5?

- ☐ Yes
- ☐ No

Compared to offline lectures, how much did your online lectures contribute to your learning process?

- ☐ Significantly less
- ☐ Slightly less
- ☐ About the same
- ☐ Slightly more
- ☐ Significantly more

Compared to offline lectures, how often did you attend online lectures in period 5?

- ☐ Significantly less
- ☐ Slightly less
- ☐ About the same
- ☐ Slightly more
- ☐ Significantly more

Did you take part in thesis-related activities in period 5?

- ☐ Yes
- ☐ No

Compared to your offline educational setting, working on my thesis has become _____

- ☐ Significantly more difficult
- ☐ Slightly more difficult
- ☐ Remained the same
- ☐ Slightly easier
- ☐ Significantly easier

Thus far the questionnaire asked about your experiences with education in period 5.

Your elaboration in the following questions helps us to determine which aspects of your online educational experiences were particularly useful or what you missed.

These open questions are optional.

What did you like most during your online learning experience?

_____
_____
_____
_____
_____

What did you dislike most during your online learning experience?

_____
_____
_____
_____
_____

Future Perspective

	Strongly disagree	Disagree	Neither disagree or agree	Agree	Strongly agree
I would like to have more **online tutorials** in the future.	☐	☐	☐	☐	☐
I would like to have more **online lectures** in the future.	☐	☐	☐	☐	☐

What would you like to keep from the online learning experiences in an offline educational setting?

_____
_____
_____
_____

In the following questions, we are interested in how the current situation (that is the global health crisis and all changes related to it: studying at home, distant online learning, different living situation, etc.) has an impact on you and your self-study behaviour. Please rate how you experience the following statements in the current situation compared to before the crisis on a scale from *much less/less/to the same extent/more/much more* (1-5).

In the current situation…

	Much less	Less	To the same extent	More	Much more
… **I encounter __ distractions in my study environment** than before the crisis.	☐	☐	☐	☐	☐
… **my mind wanders __ during my self-study** than before the crisis.	☐	☐	☐	☐	☐
… **I get __ distracted during self-study** than before the crisis.	☐	☐	☐	☐	☐
… **I can concentrate** __ during self-study than before the crisis.	☐	☐	☐	☐	☐

Please rate how you experience the following statements **in the current situation compared to before the crisis** on a scale from *much less/less/to the same extent/more/much more* (1-5).

In the current situation...

	Much less	Less	To the same extent	More	Much more
... **I put __ effort in my self-study sessions** than before the crisis.	☐	☐	☐	☐	☐
... **I feel __ exhausted after a self-study session** than before the crisis.	☐	☐	☐	☐	☐
... **I put __ time in my self-study sessions** than before the crisis.	☐	☐	☐	☐	☐
... **I am __ able to manage my energy during a study day** than before the crisis.	☐	☐	☐	☐	☐
... **I am __ able to relax in my free time** than before the crisis.	☐	☐	☐	☐	☐

Please rate how you experience the following statements in the current situation compared to before the crisis on a scale from much less/less/to the same extent/more/much more (1-5).

In the current situation...

	Much less	Less	To the same extent	More	Much more
... **I choose specific times when I study effectively** __ than before the crisis.	☐	☐	☐	☐	☐
... **I find it __ hard to stick to a study schedule** than before the crisis.	☐	☐	☐	☐	☐
... **I experience __ motivation to prepare for tutorial meetings** than before the crisis.	☐	☐	☐	☐	☐
... **I experience __ motivation to keep up with the course program** than before the crisis.	☐	☐	☐	☐	☐
... **I experience __ motivation to prepare for exams** than before the crisis.	☐	☐	☐	☐	☐

Please rate your agreement with the following statements **in the current situation** from *strongly disagree (1) to strongly agree (5)*.

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
I currently have an effective study routine that has helped me in the past.	☐	☐	☐	☐	☐
I find it difficult to adapt my study routine to the current situation.	☐	☐	☐	☐	☐
In the current situation, I am able to continue my study routine as before.	☐	☐	☐	☐	☐

Do you find it challenging to **manage your time and efforts** in the current situation?

FHML's department of education development and research is conducting a **follow-up intervention** where you can learn how to regulate your time and efforts during your self-study. This intervention will cost about two hours of your time over a two-week period **in June**.

You will receive a **small financial compensation**. In case you would like to receive more information about this intervention, please fill in **your e-mail address*** here and we will **contact** you:

_____

* Your e-mail address will immediately be disconnected from the survey results before starting data analysis.

This section asks about your level of engagement in your experiences with online education in period 5.

Since the beginning of the global health crisis, ...

	Decreased a lot	Decreased	Remained the same	Grown	Grown a lot
... my sense of being connected with my fellow students has ___ .	☐	☐	☐	☐	☐
... my sense of being connected with the teaching staff has ___ .	☐	☐	☐	☐	☐
... my understanding of what I need to do in order to succeed in my studies, has ___.	☐	☐	☐	☐	☐
... my personal interest in what I study has ___.	☐	☐	☐	☐	☐

This section asks about your **well-being** in the context of the global health crisis.

Compared to before the beginning of the global health crisis, how do you rate your mental well-being?

- ☐ Much worse than before
- ☐ Worse than before
- ☐ About the same
- ☐ Better than before
- ☐ Much better than before

Because of the global health crisis I experience an increase in the following:
Choose all that apply.

- ☐ Procrastination
- ☐ Lack of motivation
- ☐ Lack of concentration
- ☐ Stress to prepare my education
- ☐ Stress to prepare for my assessment
- ☐ Study delay concerns
- ☐ Loneliness
- ☐ Anxiety
- ☐ Psychosomatic complaints
- ☐ Other, please specify: _____
- ☐ None

Which aspects have negatively impacted your mental well-being because of the global health crisis?
Choose all that apply.

- ☐ I don't experience a negative impact.
- ☐ Domestic situation
- ☐ Workload
- ☐ Uncertainty about the progress of the academic year
- ☐ Financial issues
- ☐ Lack of structure
- ☐ Isolation
- ☐ Sickness
- ☐ Other, please specify: _____

Which aspects have positively impacted your mental well-being because of the global health crisis?
Choose all that apply.

- ☐ I don't experience a positive impact
- ☐ Contact with family
- ☐ Digital contact with friends
- ☐ Physical exercise
- ☐ More structure
- ☐ Less stress
- ☐ Less anxiety
- ☐ Other, please specify: _____

This is the last section of the questionnaire.

Here, we are asking about the technical aspects of your experiences with online education in period 5.

I have used the following online applications for my educational activities in period 5.

Check all that apply.

- ☐ Zoom
- ☐ Blackboard Collaborate Ultra
- ☐ Skype
- ☐ Microsoft Teams
- ☐ Google Hangouts
- ☐ Feedbackfruits
- ☐ Slack
- ☐ WhatsApp
- ☐ Other, please specify: _____
- ☐ Does not apply.

The following online application I have *used most* for my educational activities in period 5.

- ☐ Zoom
- ☐ Blackboard Collaborate Ultra
- ☐ Skype
- ☐ Microsoft Teams
- ☐ Google Hangouts
- ☐ Feedbackfruits
- ☐ Slack
- ☐ WhatsApp
- ☐ Other, please specify _____
- ☐ Does not apply.

In case of technical issues with online education, where did you ask for help?
Choose all that apply.

- ☐ Course coordinator/tutor
- ☐ Faculty helpdesk
- ☐ Student Service Centre
- ☐ Helpdesk online education
- ☐ Fellow students
- ☐ Other, please specify _____
- ☐ Does not apply.

Please rate your agreement with the following statements in the current distance education situation from strongly disagree to strongly agree (1-5).

	Strongly disagree	Disagree	Neither disagree or agree	Agree	Strongly agree
It was easy for me to use the online education software that was made available by UM*.	☐	☐	☐	☐	☐
My tutors were generally skilled enough to make use of online educational platforms.	☐	☐	☐	☐	☐
I have sufficient digital skills to take part in online education.	☐	☐	☐	☐	☐
My electronic devices were generally good enough to take part in online education.	☐	☐	☐	☐	☐
I feel my privacy has been respected during online education at UM.	☐	☐	☐	☐	☐

* i.e. Zoom, Blackboard Collaborate Ultra, FeedbackFruits

How can Maastricht University better assist you in technical matters regarding online education?

This question is optional.

_____
_____
_____
_____

_____

In case you would like to add anything to your answers **about online education**, please comment here.

_____
_____
_____
_____
_____

In case you have any remarks **about the survey** or missed something, please comment here.

_____
_____
_____
_____
_____

Finally, as part of this research, we would like to continue our evaluation of online PBL in a focus group setting.
The focus groups will take place online and take approximately two hours. For each student who participates we will donate 15€ to the SWOL emergency fund that helps students in need.
In case you would like to join our (online) focus group, please fill in your e-mail address* here:

_____

* Your e-mail address will immediately be disconnected from the survey results before starting data analysis.

Appendix 3.

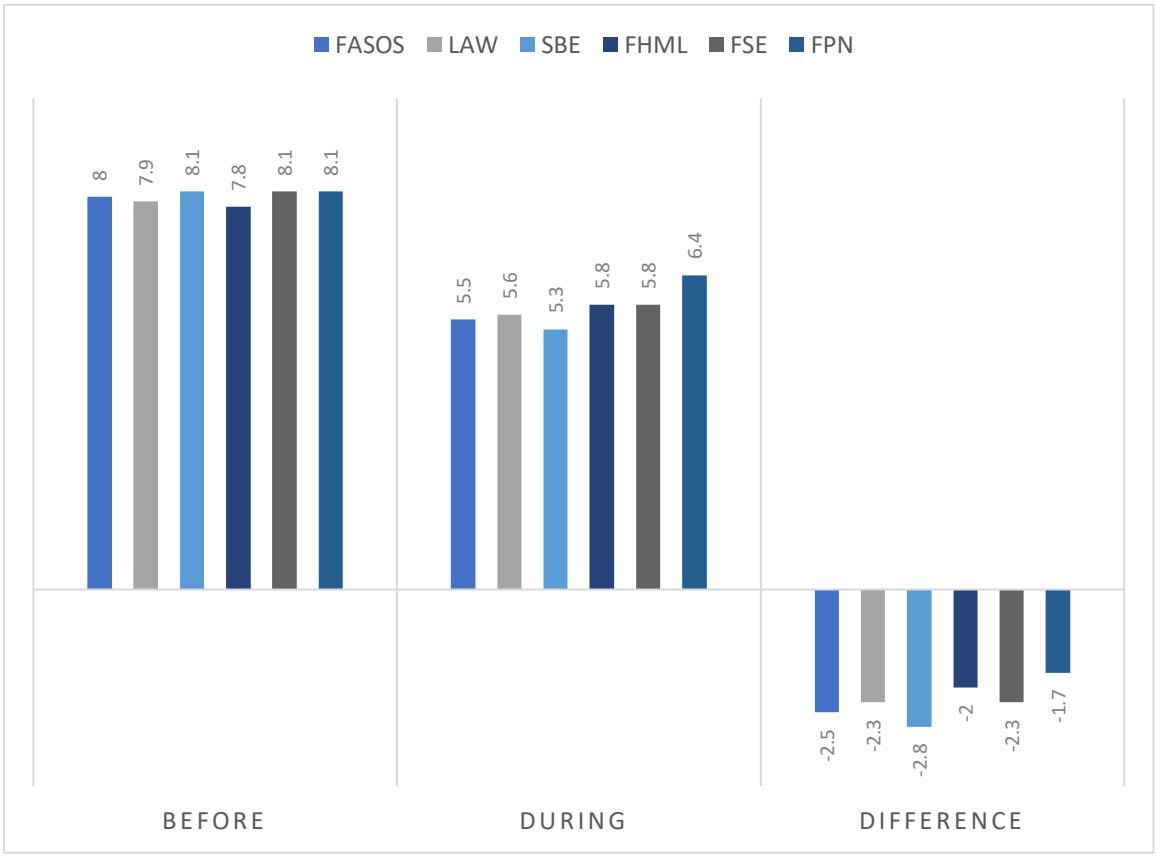

Figure 1. Bachelor students' mean educational experience before and during the COVID19 pandemic per faculty.

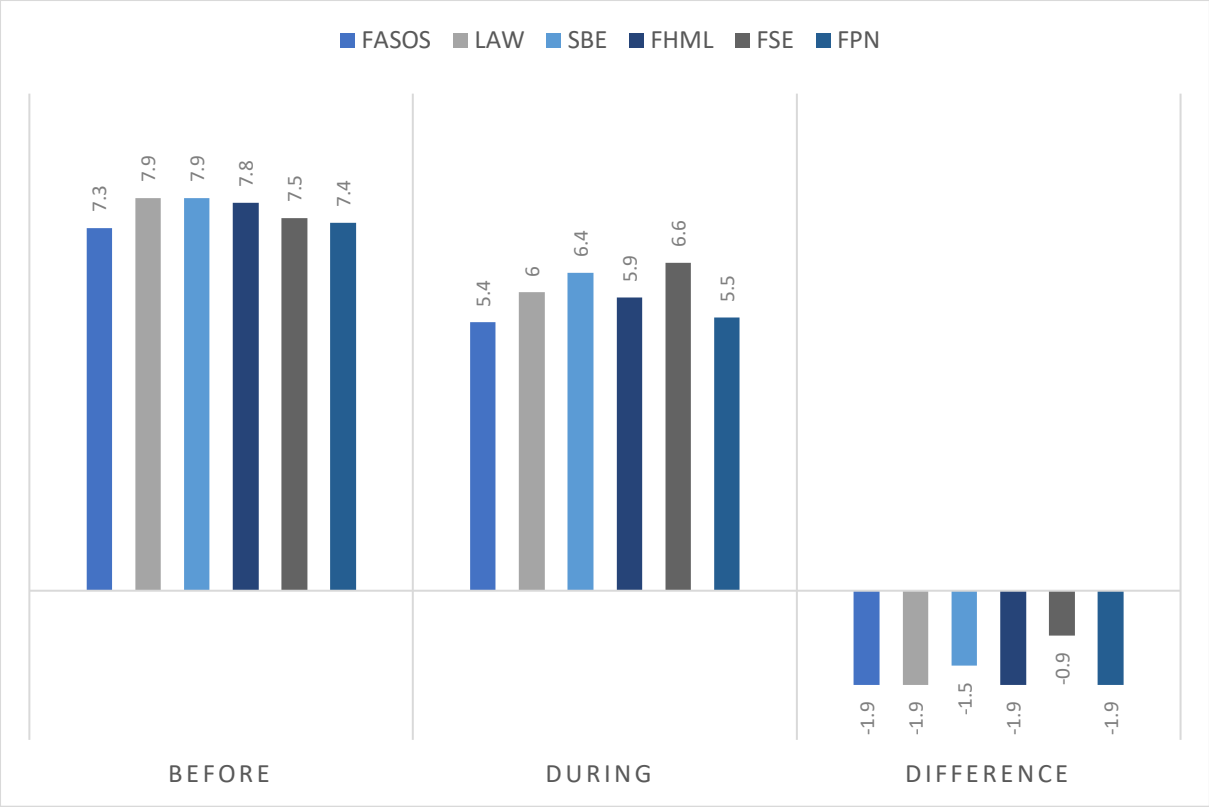

Figure 2. Master students' mean educational experience before and during the COVID19 pandemic per faculty.

Appendix 4.

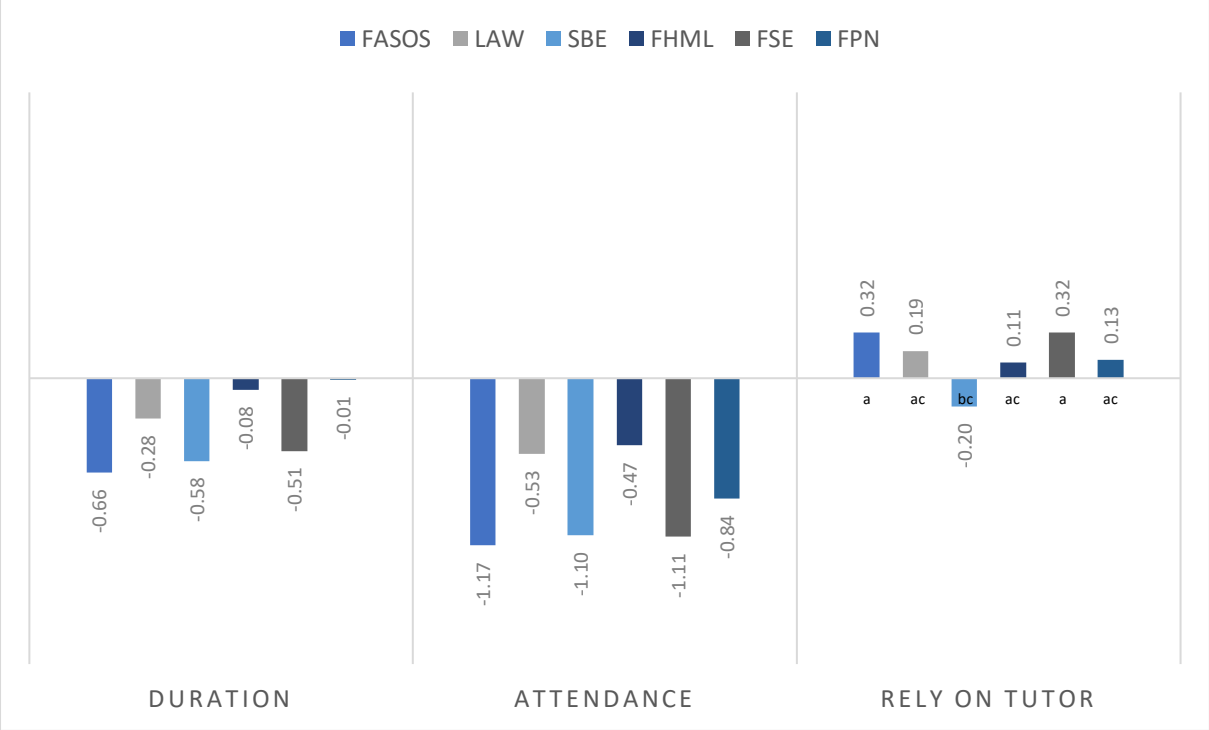

Figure 3. Rating Tutorial Items Bachelor Students (range 2 [much longer/much more] to -2 [much shorter/much less]) per faculty.

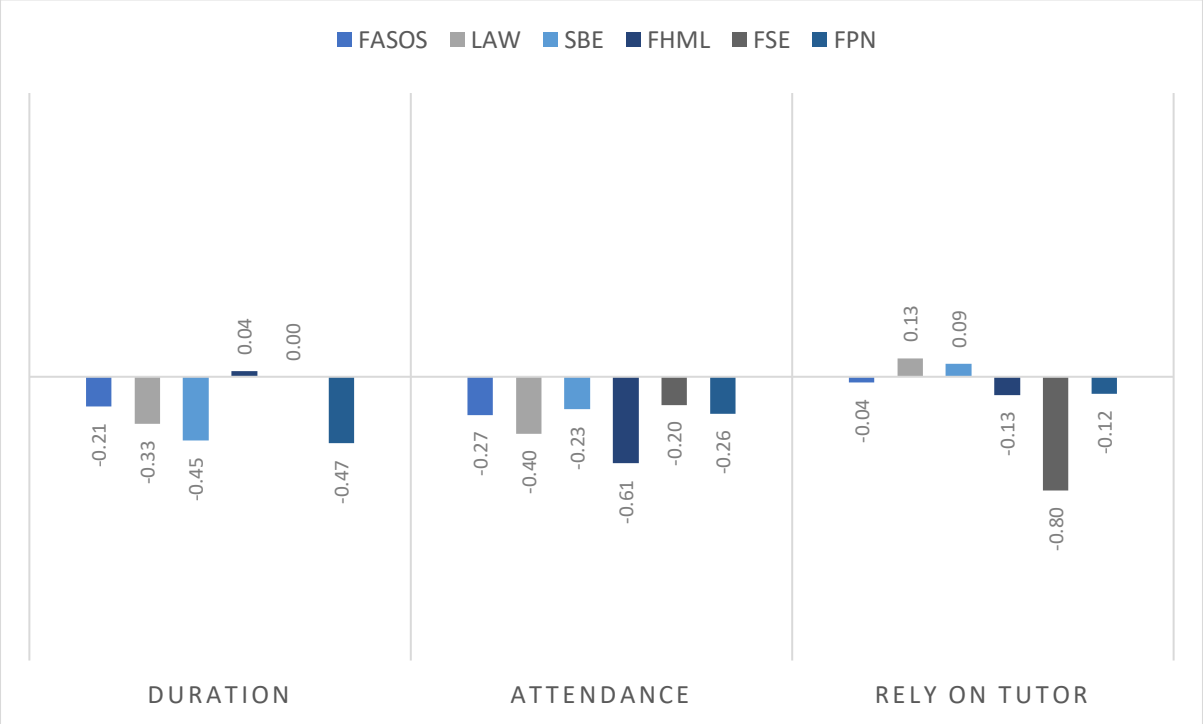

Figure 4. Rating Tutorial Items Master Students (range 2 [much longer/much more] to -2 [much shorter/much less]) per faculty.

Appendix 5.

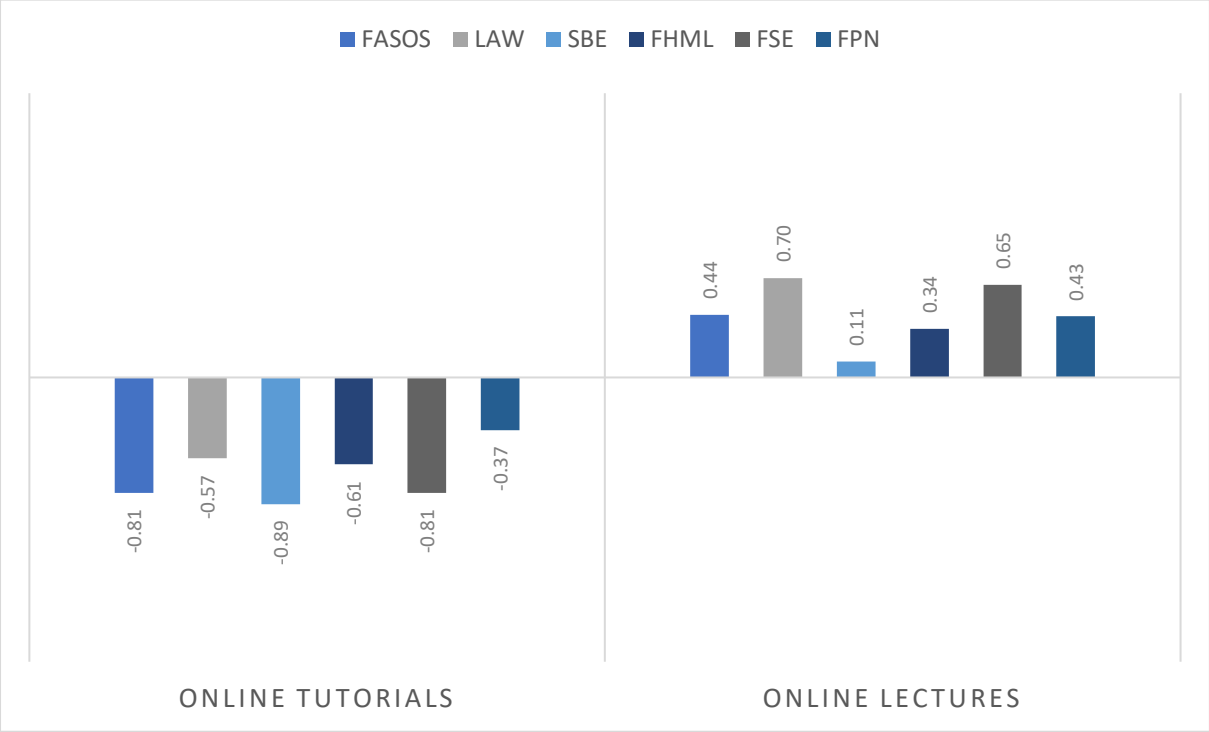

Figure 5. More online tutorials or lectures in the future by bachelor students per faculty (range 2 [strongly agree] to -2 [strongly disagree]).

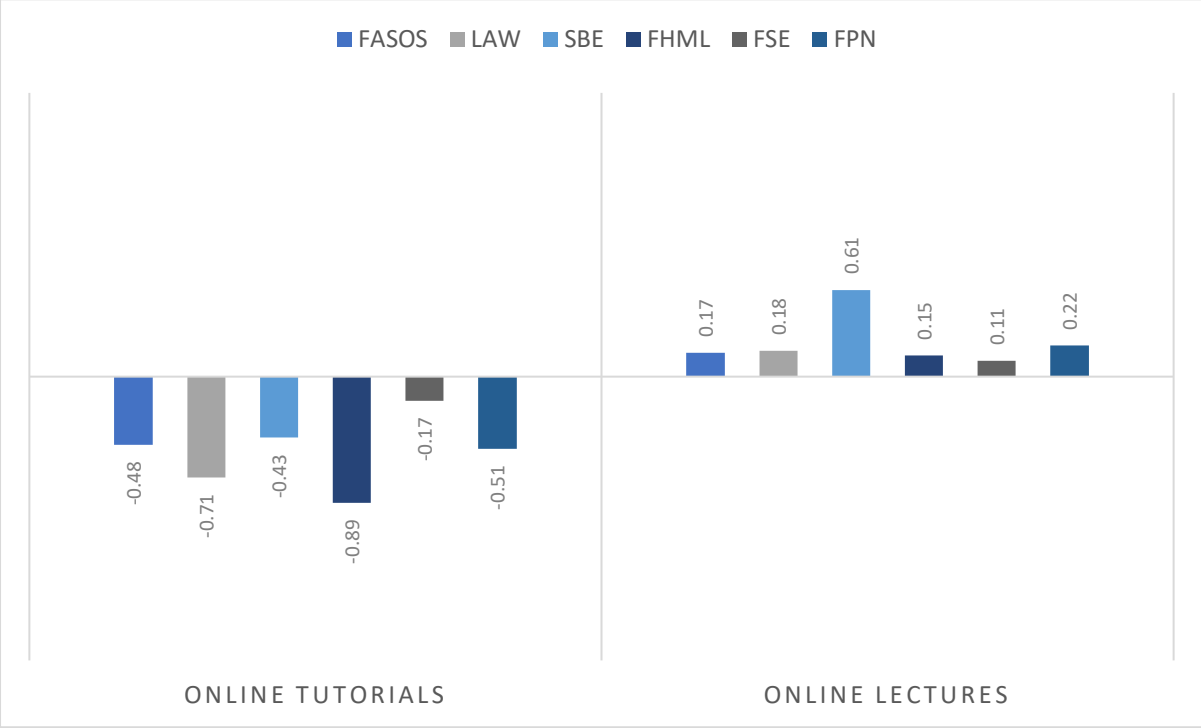

Figure 6. More online tutorials or lectures in the future by master students per faculty (range 2 [strongly agree] to -2 [strongly disagree]).

Appendix 6.

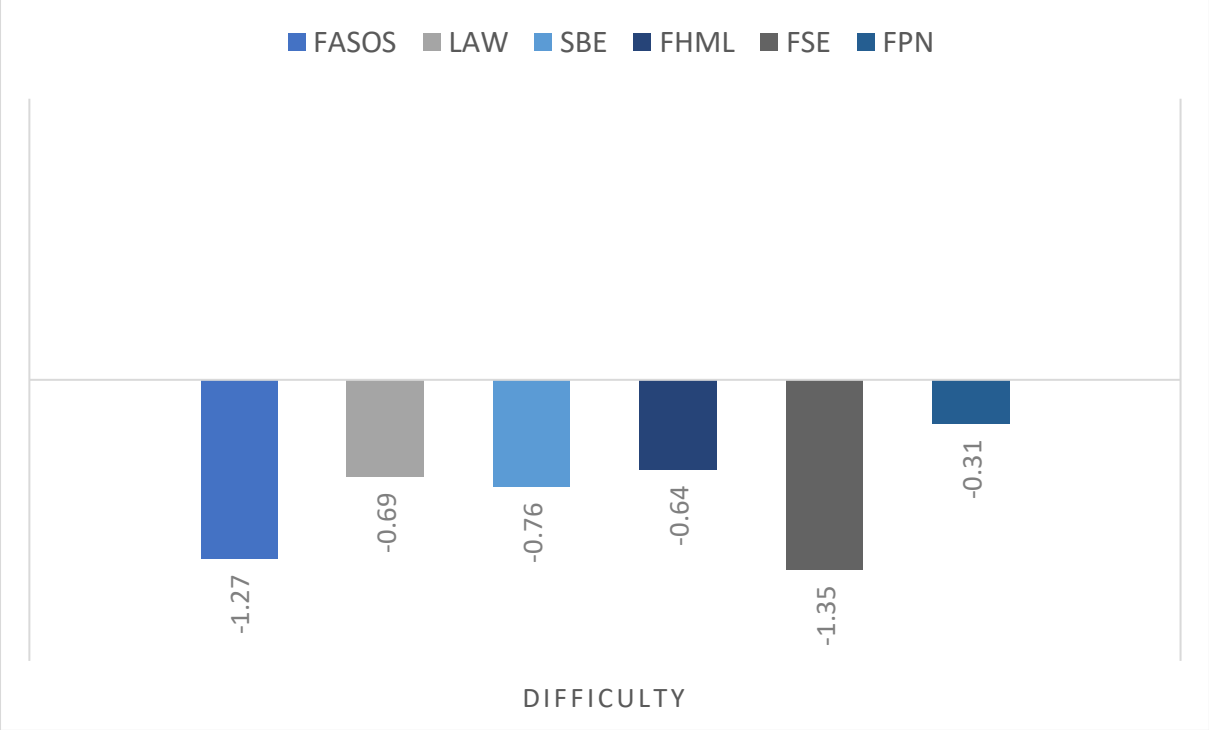

Figure 7. Rating difficulty working on thesis during the COVID19 pandemic compared to before, by bachelor students per faculty (range 2 [significantly easier] to -2 [significantly more difficult]).

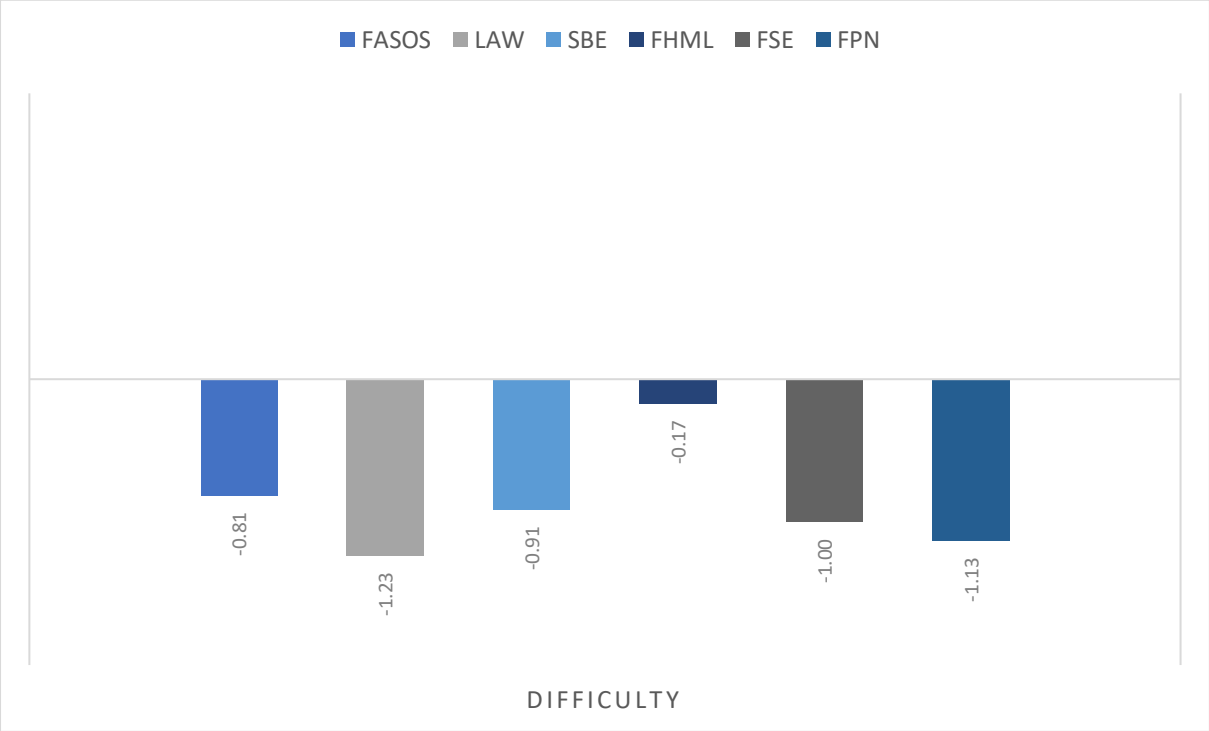

Figure 8. Rating difficulty working on thesis during the COVID19 pandemic compared to before, by master students per faculty (range 2 [significantly easier] to -2 [significantly more difficult]).

Appendix 7.

		Mean	SD	α
AR	**Attentional regulation (scale)**	**-0.85**	**0.90**	**.90**
ER	**Effort regulation (scale)**	**-0.39**	**0.96**	**.76**
ET	**Effort and time-investment (scale)**	**0.18**	**1.03**	**.82**
M	**Motivation (scale)**	**-0.68**	**0.92**	**.84**
TM	**Time-management (scale)**	**-0.36**	**0.88**	**.84**
SRL	**Mean of all items**	**-0.47**	**0.74**	**.92**

Table 5. Mean, SD and Cronbach's alpha for factors on self-regulated learning.

Appendix 8.

Frequencies for items on Attentional Regulation (AR1-AR4).

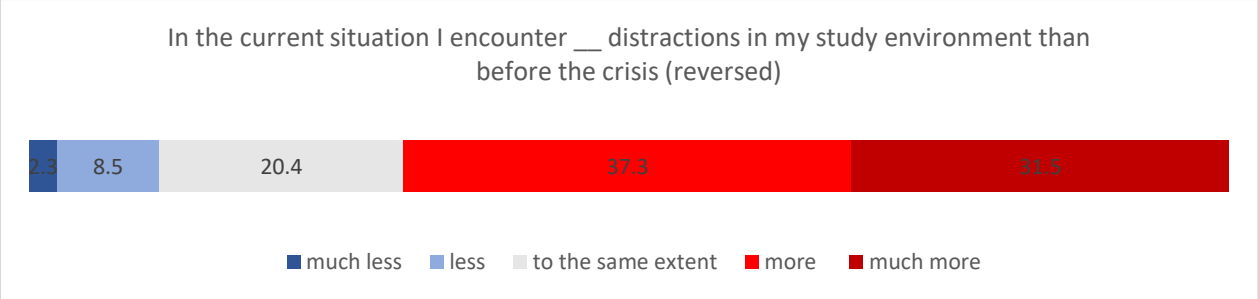

Figure 9. AR1.

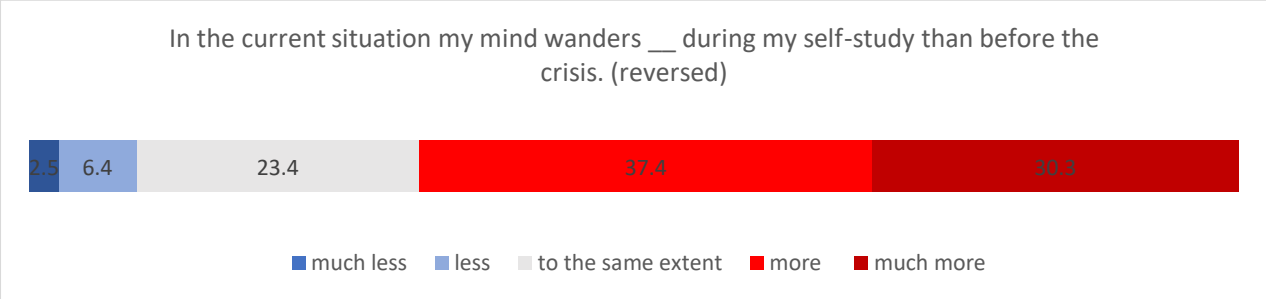

Figure 10. AR2.

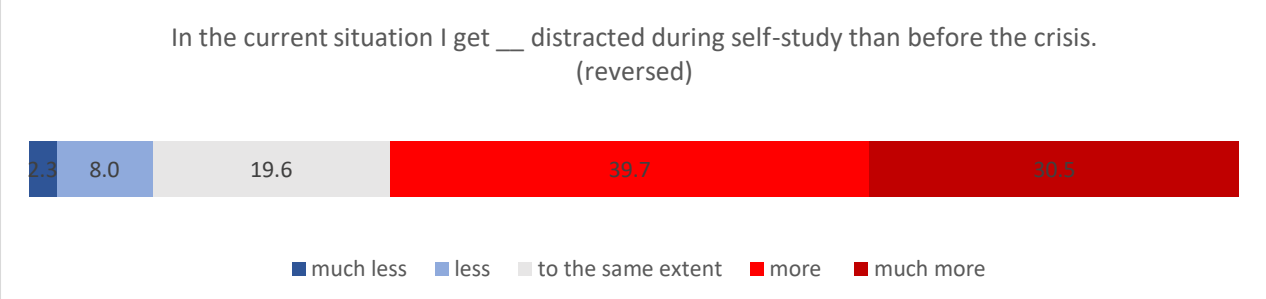

Figure 11. AR3.

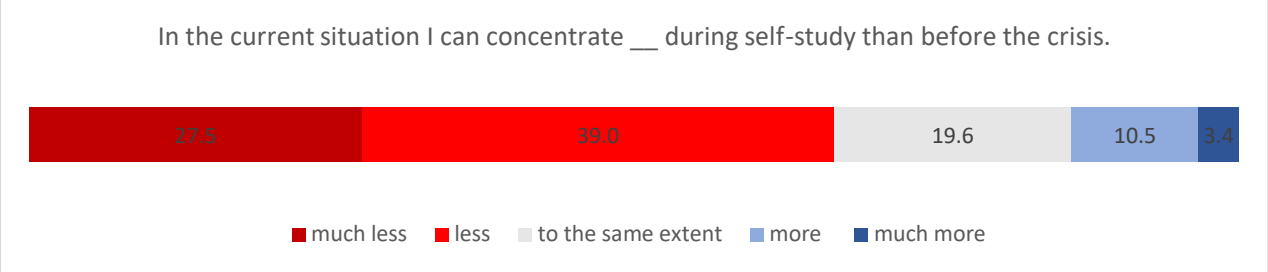

Figure 12. AR4.

Appendix 9.

Frequencies for Items on Effort-management (ER1-ER3).

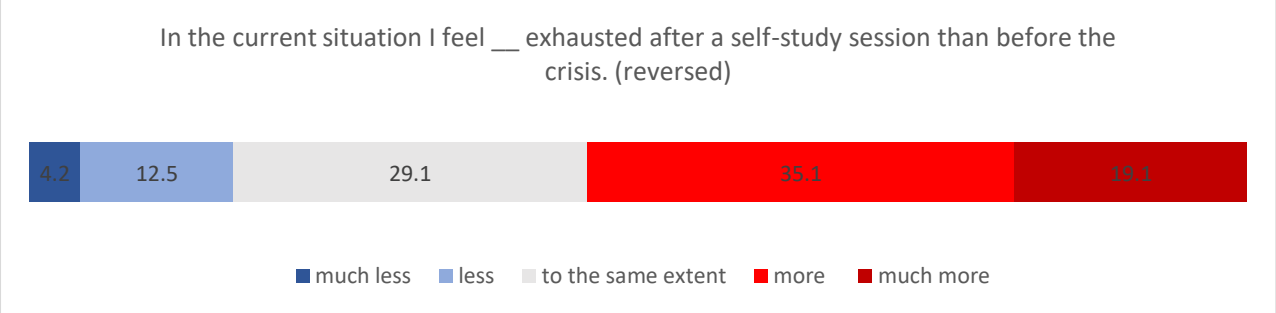

Figure 13. ER1.

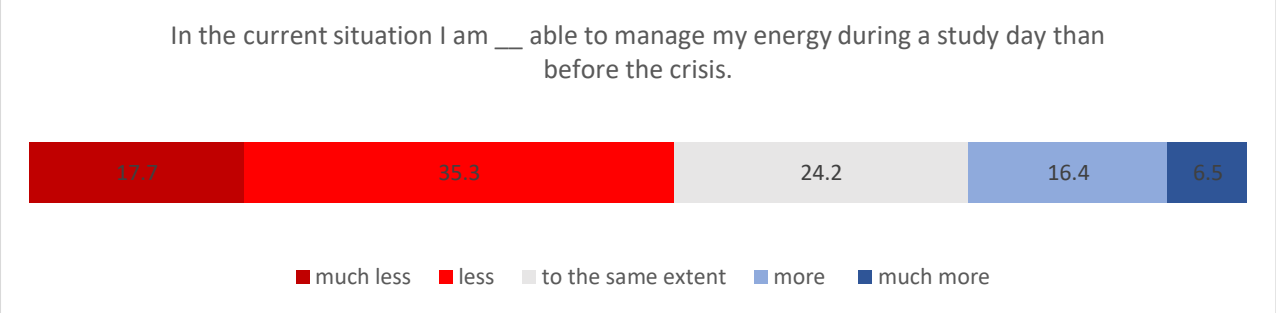

Figure 14. ER2.

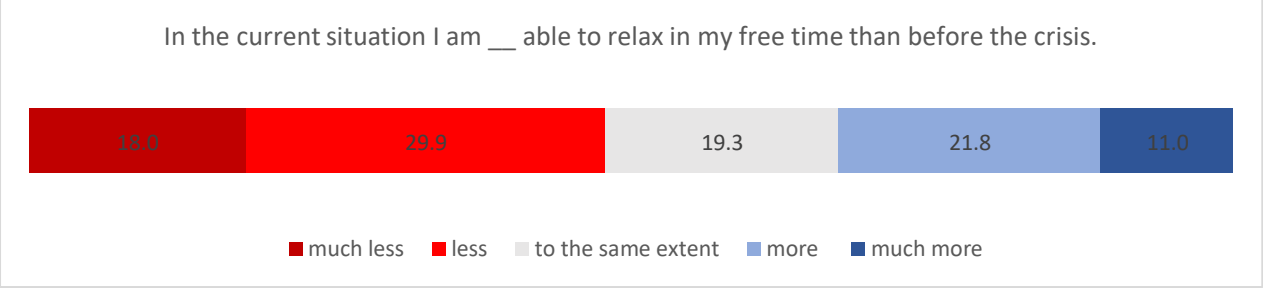

Figure 15. ER3.

Appendix 10.

Frequencies for items on effort- and time investment (ET1-ET2).

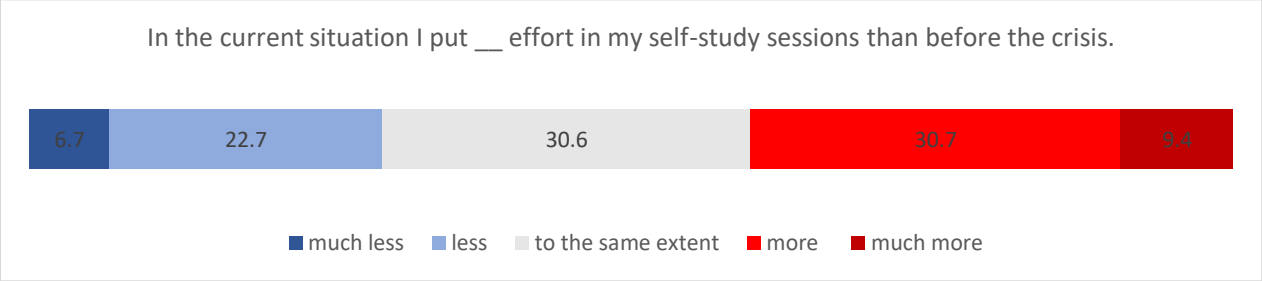

Figure 16. ET1.

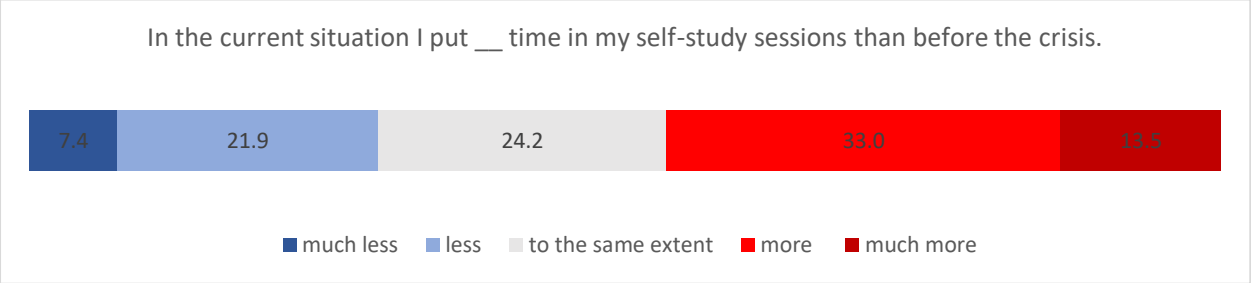

Figure 17. ET2.

Appendix 11.

Frequencies for items on motivation (M1-M3).

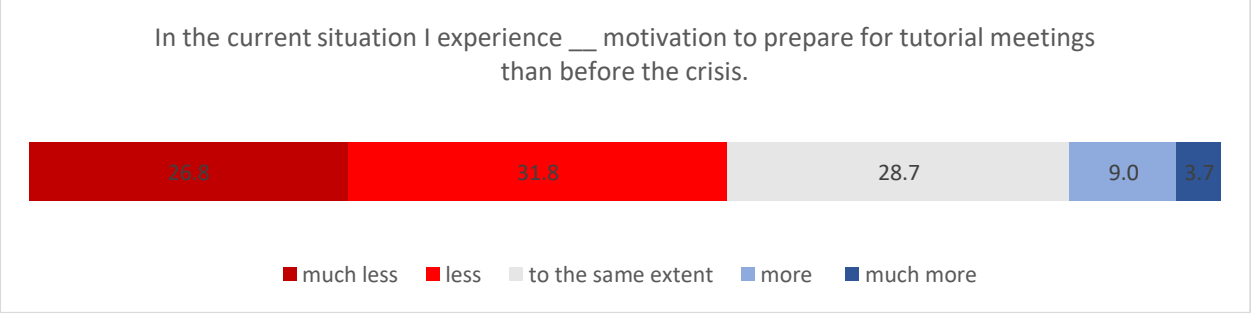

Figure 18. M1.

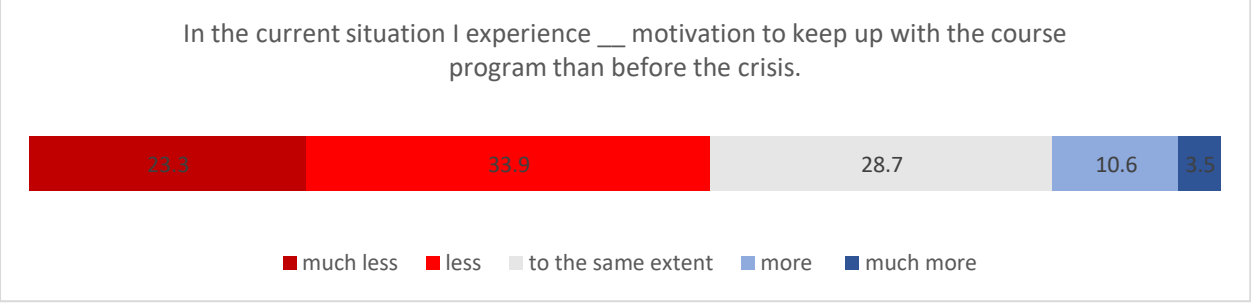

Figure 19. M2.

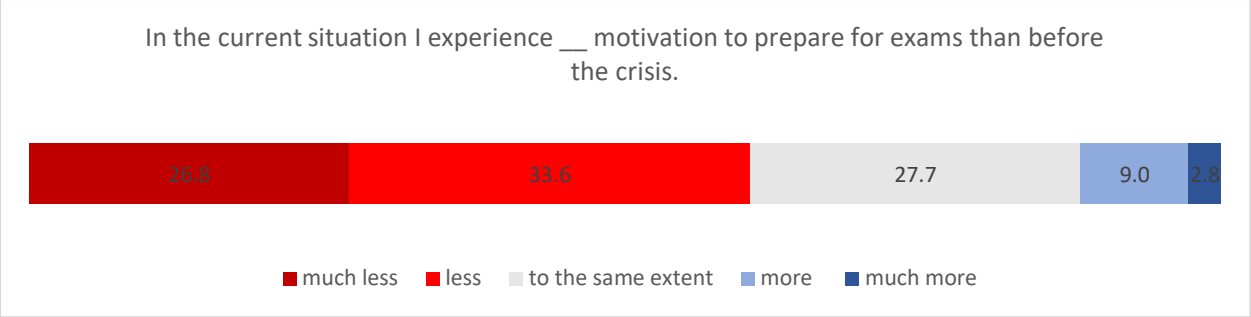

Figure 20. M3.

Appendix 12.

Frequencies for items on time-management (TM1-TM5).

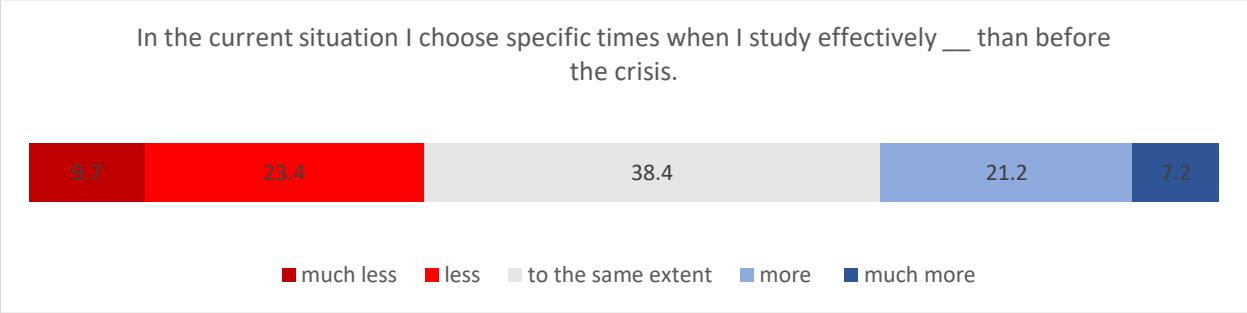

Figure 21. TM1.

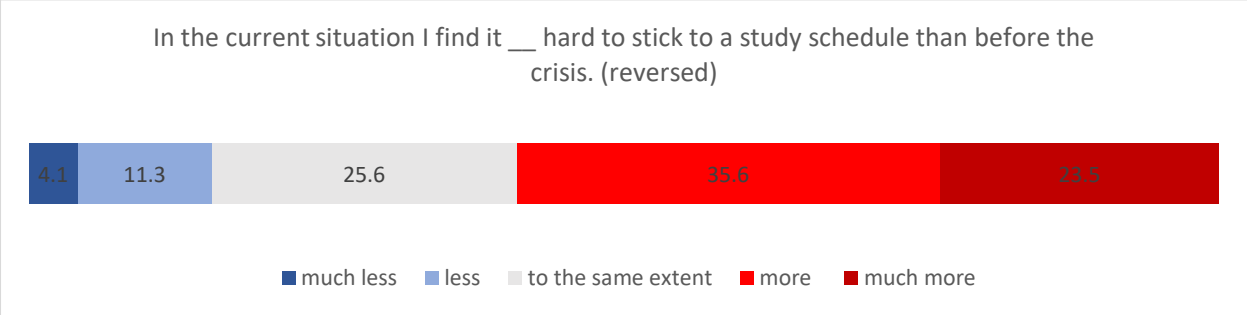

Figure 22. TM2.

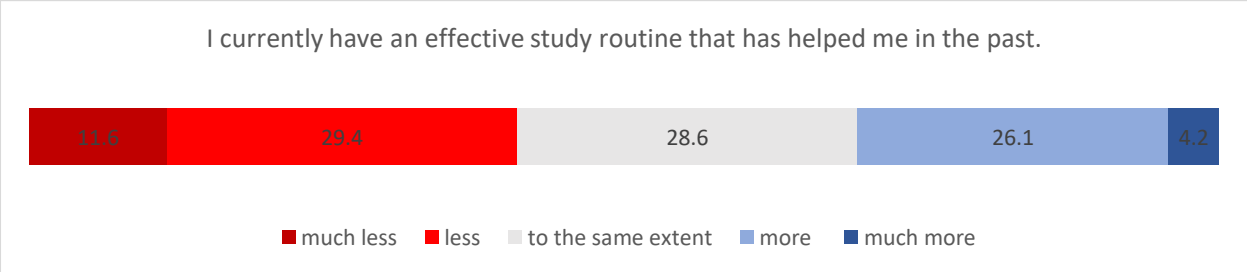

Figure 23. TM3.

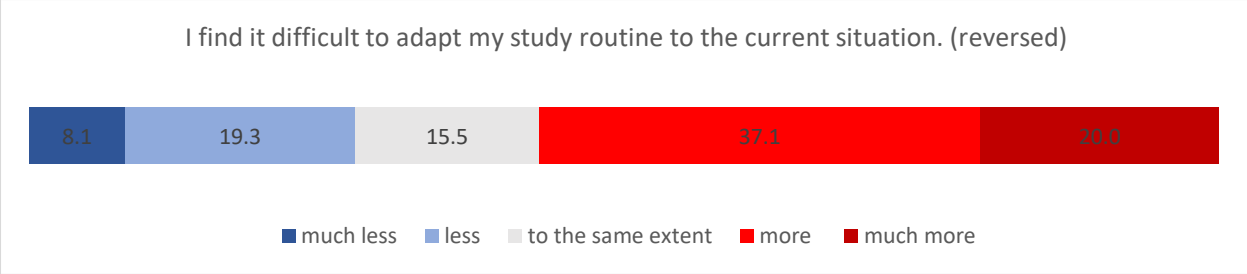

Figure 24. TM4.

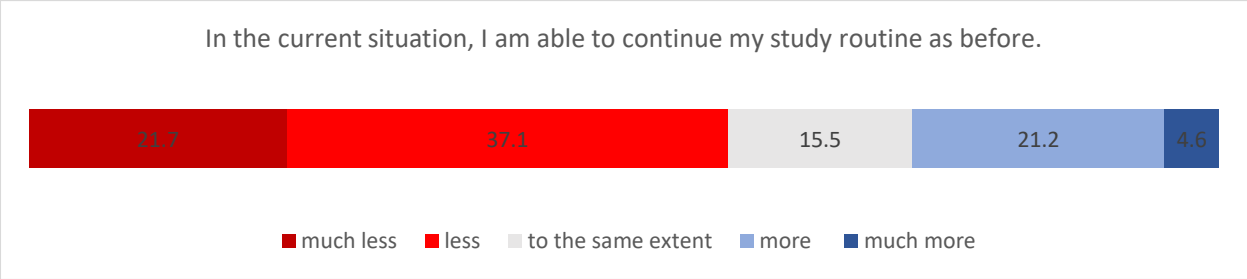

Figure 25. TM5.